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A NOTABLE GROUP

The removal of the Institute of Technology to a suburban location has been ably discussed in the REVIEW, and President Pritchett has elaborately and skilfully expounded on various timely occasions the arguments for and against such change.

One aspect of the case, and one that seems of especial weight when considering a great school of architecture, has been only partially considered, and that rather by implication. The President declares that such a school should be housed in a dignified and beautiful manner, worthy a great exponent of the useful arts and the fine arts. That is the spirit in which the school was planned and established. Compare Rogers and its setting with contemporaneous buildings at Harvard, Yale, Pennsylvania, and other American colleges. Here, as in so many other matters, our founders anticipated the spirit of the future. How pitifully ignored has been this fine aspiration during the thirty and odd years following the erection of its one worthy building! When a second structure was required, poverty conspired with the utilitarian-minded to make the factory our ideal; and under the compulsion of such environment an architect, who elsewhere designed beautiful buildings, produced the familiar Walker Building. The factory

was still the ideal when the Engineering Building was proposed ; but here, under the influence of Létang, we were more fortunate, for, given a rigid limitation of cost, it would be difficult to find a superior to the Trinity Place façade of the Engineering and Pierce Buildings. Its simple elegance evokes admiration despite its position, close to the curb on a narrow street.

We hear and read much of the beautifying of American cities. Forty years ago the knowledge of such possibilities, and how well they were worth accomplishing, was confined almost wholly to the few architects and art-lovers familiar with Old World cities. The gridiron street-plan was our universal admiration, because it was so practical, although truly it was not even that. Costly buildings were placed to suit the real estate hustler, regardless of the lamentable waste resulting from the expenditure of great sums for effect, placed where ineffective. The larger architectural problems are, with rare exceptions, still met in the old haphazard way, neglecting opportunities and destroying possibilities for fine things, while we console ourselves that this is so new a country, regardless of the fact that the municipal splendors of Paris, Vienna, and Berlin are largely the intelligent work of the last half-century. Those cities have laid out streets to give suitable emplacements for their important buildings and have put new and noble buildings on such sites ; and for their valued monuments of architecture they have opened new streets, so that, like Notre Dame in Paris, these can be best seen. Boston has no *Notre Dame de Paris*, but it has the finest Gothic spire in America, and one worthy to compare with its English prototypes ; and by more than a happy chance, and indeed by a notable and exceptional civic foresight, there is space about it, so that it can be seen. Very narrow is the view that would limit

to its owners the beneficent influences of the noble spire, regardless of the countless thousands passing and repassing on Boylston Street. Or let the reader stand on the east side of Berkeley Street next Commonwealth Avenue and he will see what fine groups it makes with the excellent buildings beyond it. Now to destroy the happy conditions of noble architecture is not the ideal course for a great school of architecture to pursue. This is the thesis that the present reader is besought diligently to meditate. The longer and more such a course is considered, the less gracious will it appear. Granted the legal right, granted that it will put money much needed in the purse, will not some sacrifice of rights and of cash better befit the broad and high standards of civic and professional life for which the Institute is preceptor? The New York City government in less enlightened times gave St. John's Park to be covered with the sheds of a corporation. One may see a certain harmony between that appropriation and giver and receiver, but to profit by the appropriation of open space long dedicated to the benefit of the public does not harmonize with the traditions of our school and city. We are told that mind is more than matter. The fine arts enhance the useful arts. Architecture is the noblest of all the arts. Great architecture glorifies a country for ages. Good architecture ennobles a city. The highest work of a school of architecture is to teach its students directly, and the public indirectly, to know the best in that art, to admire it, to love it, to strive for it, to respect and magnify it. The student's faithful drill in mechanical, scientific, and artistic details, and the professor eloquently describing great accomplishments of the past for emulation in the future, are only preliminaries. The language of architecture is not in words or in drawings, but in the accomplished works. The first step is

to recognize fine work where it exists. That we have no Parthenon, nor great mediæval poem in stone, is no reason why we should be careless of the good we have. A church in Florence treasures a picture of the Madonna, stiff and crude, but containing a trace of the divine spark that previous pictures lacked. Newly painted, it was carried through the streets amid the joyful acclaims of the admiring citizens. Among the grandchildren of those discerning men the splendor of the Renaissance culminated. Many readers of the REVIEW have seen the photographs exhibited to show how the present promising but neglected basin of the Charles might be given as much value to this city as the Alster Basin has for Hamburg. Have they noted how superior is the beautiful group of spires and towers that rise above our maltreated river to those which grace the more beautiful sheet of German water? Few Institute men realize the exceptional architectural surroundings which the Institute now possesses, standing in the midst of the most notable architectural group in America. The authorities of our school are to determine whether that group shall be sundered and shattered or shall be further unified and developed. When we see the beautiful new buildings of Princeton, of Pennsylvania, or of Washington University in St. Louis, and think of the magnificent groups that are foretold by these beginnings, we are moved to decide for the moment that the only thing for the Institute of Technology to do is to migrate and start anew. But the school would be singularly fortunate if the architectural result were better than could be accomplished where she stands. Upjohn's spire and the beautiful rear of Trinity in close proximity, Richardson's Brattle Square tower and the Public Library near by, are factors in an architectural ensemble which will not be replaced elsewhere. Very attrac-

tive is the cloistered charm and spacious quiet of a suburban college, but the Institute has a position, character, and work peculiar to itself, a career brief but vigorous; and the artistic way, scientific as well as æsthetic, is to accept the good peculiarities, hold to them, and develop them.

Let the reader imagine what could be done to make a greater Institute of Technology where she stands, a dignified architectural whole, harmonious with her architectural neighbors. Rogers would well hold its own. The accompanying block plan (*see Frontispiece*) is offered as a help to make a little clearer what such possibilities are and what they would involve. When Columbia College recently removed to Morningside Heights, they planned for the future and built what was needed for the present. The plan for the future shows a ground area of buildings about the same as that shown in the block plan here presented. Columbia planned for buildings of four stories above the basement. The Institute buildings have five, so that the block plan shows a capacity greater by about 20 per cent. This somewhat more than quadruples the present permanent buildings of Technology, counting as such Rogers, Walker, Engineering, and Pierce.

The vista suggested between Rogers and the Walker Memorial; the cross vista to an Institute building on Clarendon Street, flanked to the north by the Ludlow and Trinity, flanked to the south an equal distance by worthy Institute buildings; these faced on the opposite side of the street by a symmetrical group of school buildings; the Engineering-Pierce quadrangle completed, enclosing a court, perhaps roofed to form a gallery for the largest architectural casts; the original block on Boylston Street, appropriated wholly to the Institute and perhaps, as suggested in the plan, with Walker and Natural History ulti-

mately rebuilt symmetrically and connected by suitable walls or fences to Rogers, forming courts,—all these would afford sufficient and abundant architectural opportunities for a very imposing development.

Evidently, the acquisition of the additional property means a very large expenditure, its assessed valuation being about \$1,800,000. On the other hand, the departure of the Institute and of the Natural History Society means a probable sacrifice of buildings valued at nearly \$1,000,000. To stand fast requires a great effort; but is the problem more difficult than that which fifty years ago confronted the Virginia professor who offered to the comparatively small and poor community the “New Education,” then unknown, untried, and unvalued?

The advantages of removal have been stated to be seven. May we not think some of these might as well or better be attained by remaining? If a partial quotation be permitted, may we not, without destroying all the Institute now has, *increase public interest through the conspicuousness of a radical step, which will possibly create a new sentiment and affection for the Institute, enable the buildings to be re-planned on a more suitable and unified scheme, and gain an unsurpassed increase of dignity that will make the greatness of the Institute more patent?*

HENRY A. PHILLIPS, (IV.) '73.

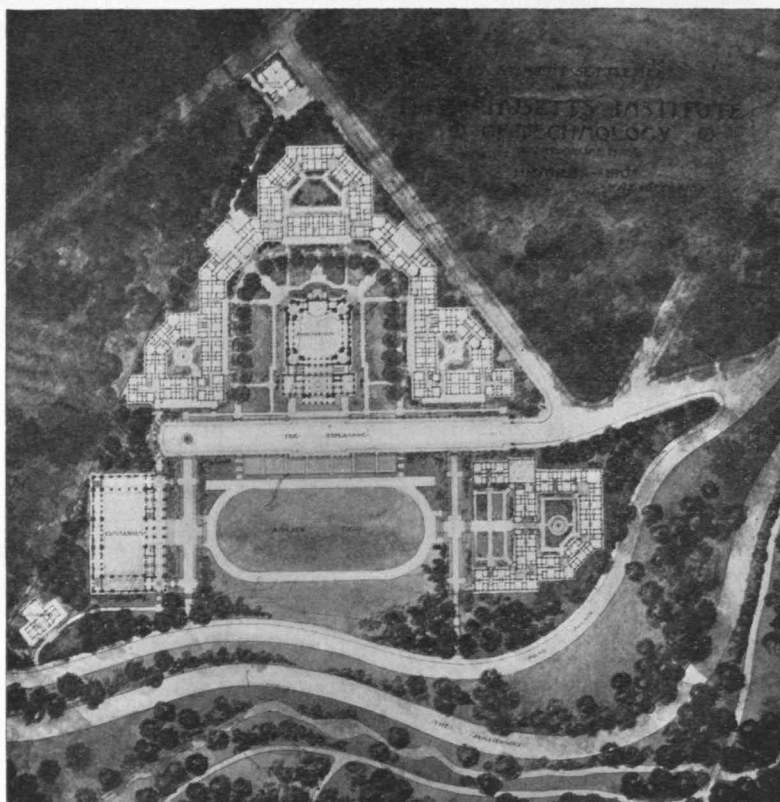
A STUDENT SETTLEMENT FOR THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

BEING A

THESIS PRESENTED FOR THE DEGREE OF MASTER OF SCIENCE,
JUNE, 1903

During the summer of 1902 the long-mooted question as to the future location of the Massachusetts Institute of Technology was brought to a head by the offer of Mr. Samuel Cabot, whereby an opportunity was given to purchase at a reasonable figure a desirable tract of land, situated five miles from Boston, in Brookline, Mass. Prior to this, the question of change of location had been one of but vague interest to the majority of alumni and other interested persons. When, however, Mr. Cabot's offer was announced, the question assumed a leading place in the thought of those concerned in any way with the future welfare of the Institute. Its needs, present and future, were discussed from every point of view and in every phase. Among the questions, by no means the least important was whether the whole Institute should be removed to a quieter and more extensive location or whether a place should be provided simply for the students themselves,—a place in which to foster their social relations. It is with the adaptation of the Brookline land to these conditions that the present thesis has to do.

A very cursory examination of the site offered served to show that an entire lay-out for the Institute of lecture halls, drawing-rooms, and laboratories on the Brookline lot is out of the question. A reference to the original survey dis-



closes the following as the nature of the land. It is an irregular triangle in shape, its base facing to the south-east, and resting on the Jamaica Way, one of the roads of the Boston Park system. From this the land rises steeply on the sides, gently in the centre, through its whole extent, to the apex of the triangle, which lies on High Street. To the north-east a wing stretches out toward Boston, so rough and steep, however, as to be of little value. To the north, across Highland Road, the land rises abruptly to the summit of the hill whose crest is occupied by a private resi-

dence. To the west is another property, on a considerably higher level than that under consideration, but of such a nature that it might be considered as a possible addition. To the south and east is the parkway, on the other side of which the land rises sharply. The whole property comprises fourteen acres of land, of which less than thirteen are available for building. The very peculiar shape reduces the "carrying power" of the land even more. It is evident, then, that only a limited number of buildings can be effectively placed upon it. In view of these limitations of site it seemed necessary to consider in the problem solely the arrangement of the tract for a student settlement,—a place for the fostering of college relations and for the development of a stronger spirit of union among the students. This, together with the advantages of purer air and quiet, would be the things sought.

As a result of the above, we have the following program of requirements : —

Dormitories, with dining-rooms, for 1,500 students.

Gymnasium.

Athletic field.

Auditorium.

Administrative offices.

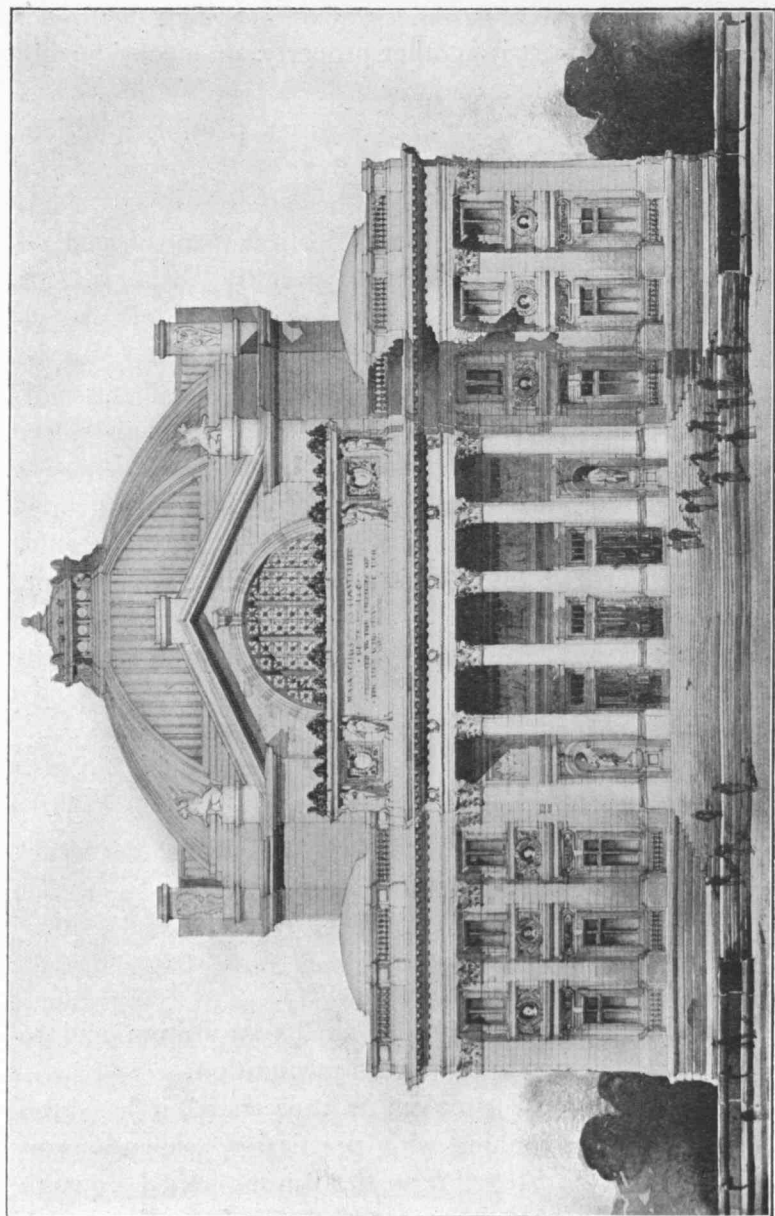
Library.

Infirmary.

Power House, Laundry, Service, etc.

The whole to form an "open-air" composition and to utilize as well as possible the land in question.

In considering the problem as thus stated, it has been my endeavor to combine with practical considerations as much of what the French term the "monumental" quality as possible. By that is meant the securing of as much dignity of arrangement as is possible, and the making of

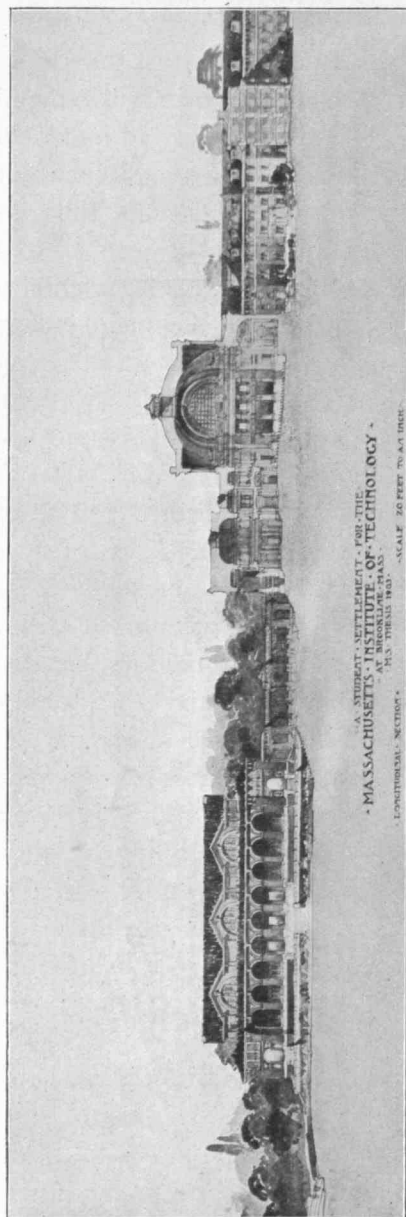


Auditorium, Library, and Administrative Offices

a composition worthy of a great school like the Institute, one which every Technology man will remember and point to with pride. Hence I have adopted the scheme of grouping the buildings as far as possible around the outside of the lot. Dormitories, dining halls, and gymnasium have been disposed around a central area so as to form a nearly continuous chain of buildings. The open space within this encircling wall is divided by the main esplanade into two unequal divisions. Below, on the comparatively level land near the parkway, is the athletic field with its running track, tennis courts, base-ball field, etc. At one end of this, and raised considerably above it, is the gymnasium. At the other end is a group of dormitories. The esplanade itself is explained by the approach. This, of necessity, follows the slope to the north-east, and comes into the tract almost from the rear. It has been harmonized with the composition by continuing it into a broad esplanade which crosses the whole ground and separates the athletic field below from the group of dormitories above.

Above this esplanade the dormitories enclose a sort of great court, in the centre of which is located the single monumental and elaborate building of the composition. This includes the auditorium, administrative offices, and library. It might well be a memorial building, with carving and sculpture, erected, as states the inscription over the portico, "To the memory of those who have made Technology famous."

This building, since it occupies the place of honor in the whole composition, is the only one to be built of stone. All the others are of brick and wood, in a free style of architecture. They are fitted to be the homes of students, having broad cornices, big windows and bays, and comfortable-looking chimneys. They are the homely setting that



A STUDENT SETTLEMENT FOR THE
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY
 AT BOSTON, MASS.
 PLAN, FEBRUARY 1901. SCALE 20 FEET TO AN INCH.
 L. CHURCHMAN, ARCHT.

would render more impressive the single great building replete with medallions and statuary and with its colonnade facing the open campus and parkway.

The dormitories themselves formed the most difficult part of the planning. The restricted area rendered it impossible to dispose them as detached buildings; while the privacy already secured, and the location in the open country, rendered the English idea of enclosed quadrangles unsuitable. Accordingly, I have combined elements of these two schemes, and have made as many rooms as possible to open directly into the great central space. The subsidiary courts necessary to complete the accommodation are sacrificed to the gaining of this end. Of these subsidiary courts there are four, all opening by archways upon the central court. For obvious reasons corridors have been reduced to a minimum, there being less than six hundred feet of them throughout the dormitories. In place of them the separate entrance plan has been adopted, wherein, in the typical scheme, four studies and eight bedrooms on each principal floor, and two studies on the top floor are reached through one entrance and hallway. This "staircase," to borrow an Oxford term, is a unit in itself entirely shut off by party walls from all other dormitories.

Within the staircase each study has, typically, two bedrooms so arranged that the whole will accommodate three students. Besides these there are about 25 per cent. of studies with one bedroom and a few with no bedrooms.

The average space allowed per man, on this basis, is two hundred and twenty square feet, including his share of hall and toilet-room. This is probably rather small, for modern dormitories require from two hundred and fifty to two hundred and seventy-five square feet per man to give entire satisfaction. The reduction has been effected by reducing

all dimensions somewhat. Instead of one large "commons" I have arranged three smaller dining halls,—an idea taken again from the English colleges. The object was twofold: first, to give better and prompter service; secondly, to let the men come together in somewhat smaller groups than they would in one great dining hall. By that means they would get to know each other better, while the chance of disturbance would be less. These halls are so arranged as to get the best possible service.

The power house and laundry are placed in the extreme rear of the ground and open upon High Street. No attempt has been made to secure any effect from that street or from Highland Road. Everything has been sacrificed to actual comfort in the dormitories, to the exigencies of space, and to the aspect from the campus.

The central building contains an auditorium seating 1,500 persons, with stage, anterooms, and galleries. In front of this are offices for the Bursar and Registrar, and secondary offices for the simple needs of the President and Secretary away from the Institute buildings themselves. The gymnasium needs no especial comment.

The results of this investigation have proven amply the assumption on which they were based: namely, that the land is far too small to permit of the introduction of any buildings of instruction. Moreover, they show that the land is too small even for a satisfactory student settlement following the lines laid down. The athletic field, the dormitories themselves, the courts, the gymnasium, all are more or less cramped and awkwardly arranged. Could the adjoining lot to the west, comprising some six acres, be secured, there would then be space enough for a satisfactory student settlement without crowding and with room for expansion. Even then, however, there would be no place for buildings for instruction.

Besides the disadvantages offered by area and shape, the Brookline land offers almost no opportunity for expansion. To the north, east, and south the boundary is fixed absolutely by the parkway and by an abrupt hill. To the west only is expansion possible, and then only for some six acres. The twenty acres, however, would give vastly better opportunity than does the present tract.

With the question between moving the whole Institute and the founding of a college settlement this paper is not concerned. It has, however, reached conclusions which justify assumption as to the amount of land needed by the Institute when it does move, as in time it must. If a student settlement alone is planned, twenty-five acres are none too few. Thirty would be better. If the whole Institute is to be moved, there must be between fifty and sixty acres available to insure complete freedom from cramping.

The Brookline land could not be more than an unsatisfactory makeshift. Though its location and aspect are admirable, its shape, its surface, its close limitations, render it unsuitable for growth. To be a satisfactory composition, anything built now would of necessity fill the entire space. If space is left for expansion, effect must be sacrificed and architectural arrangement dismissed. Upon which horn of the dilemma to land would be a serious question.

WALTER PURTON ROSS PEMBER, '02.

NEW ENGLAND'S LEADERSHIP IN THE
TWENTIETH CENTURY *

The world has just begun a new century, as civilized man counts time; and we have marked it, as we are prone to mark important turning-places, by reviews of the past and by attempts to forecast the future. Such experiences are not without their value. It is a good thing, now and then, to pause long enough to take account of stock, both in material and in spiritual matters. Such examinations serve to clear the way for new action.

When the new century was ushered in one hundred years ago, New England's position in the Union was a commanding one. Twenty-three per cent. of the entire population dwelt within her borders. A New England President had just occupied the President's chair. Jefferson, at the beginning of his administration in 1801, had in his cabinet of five three members from Massachusetts. In wealth and industrial power, in intellectual alertness and commercial enterprise, the promise of leadership was foreshadowed.

And this promise blossomed into a noble fruitage within the first half of the century. A long line of famous men made Boston and New England known the world over. The development of manufacture advanced by leaps and bounds; and a world commerce was built up, which made New England ports and New England ships familiar names in every sea.

As we stand at the beginning of another century, it is evident that the last fifty years have brought a remarkable readjustment of political, industrial, and commercial interests. New England begins the new century with less than eight per cent. of the population of the Union within her boundaries. The centre of gravity, both of intellectual and material things, has moved steadily westward. The centre of agricultural activity fifty years ago was in West Virginia, while to-day it is somewhere in Illinois; the centre of population fifty years ago was near Parkersburg,

* An address delivered at the opening of the new building for the Lowell Textile School, February 12, 1903.

while in 1900 it was to be found near Mansfield, Ohio; the centre of manufactures fifty years ago lay near Altoona, Pa., while it, also, to-day lies near Mansfield, Ohio. The westward drift of educational activity is even more marked.

As one looks back over the part which New England played in the settlement and development of our nation, as he thinks of the movements which have been led and carried to successful issue by New England men in the first half of the nineteenth century, when one calls to mind the glories of her commercial expansion in the days before the Civil War, the question naturally comes to mind, What rôle is New England to play in our national life in the century upon which we are just entering? Will she be satisfied with anything less than leadership, and in what directions may she fairly expect to exercise such leadership?

I have heard, once and again, a pessimistic note in which it is intimated that New England is ready to rest upon past glories, that for the future she will be content to serve as the conscience of the nation, that her chief contributions will consist in furnishing education to the rest of the country and the facilities of a good summer climate to the inhabitants of the Mississippi valley.

I must confess that this sort of talk seems to me utterly unworthy of the New England spirit and the New England traditions. I hope that New England may remain, as she is to-day, pre-eminent in educational facilities; that she may attract in ever-growing numbers students and visitors. Leadership in education, however, cannot remain permanently in the hands of a region whose activities are purely academic. If New England is to lead in education, she must lead also in the material enterprises and the political interests of the nation; and there was never a time in the history of our country when her opportunities for such leadership were better. There was never a period, either in the days of Revolutionary agitation or in the busiest epoch of her mercantile development, when there lay before her a fairer road to leadership than that which the twentieth century points out. And perhaps at the inauguration of such a building as this — an enterprise having to do at once with education and with industry — we can spend a

half-hour in no more profitable way than to consider in what directions national leadership lies, and in which of these New England may hope to gain distinction.

"There be three things," wrote Bacon, "which make a nation great,—a prosperous and fertile soil, busy workshops, and easy conveyance for man and goods from place to place." The judgment of mankind since Bacon's day has practically accepted this judgment, with certain modifications which the history of the last one hundred years have brought in. The fertile soil, if that be held to include the treasures of the mines, the busy workshop, and the effective transportation are the material bases of wealth and of prosperity. We know now that back of these also lies the power of education and of training, and these may be reckoned among the great assets of a nation.

To the first of these endowments for a national prosperity New England can make no claim. She may frankly admit that agricultural leadership must go to the rich valley of the Central West, and that, however much her agricultural products may be improved by intelligent cultivation they cannot compete with those of the more favored region. But in the other directions along which greatness is to be sought, in intellectual leadership, in industrial leadership, in commercial leadership, there remains for New England a fair field; and in these she has not only an equal chance with other sections of the country, but certain distinct advantages.

First, as to intellectual and political leadership. If education counts for anything, New England has distinct advantages over most sections of the country. Her schools, colleges, and universities have had the advantage of a larger growth, of more careful study by educated men, and of more generous support than those of any other section. An educated population has in this day an enormous material advantage over one not well educated. Particularly is this true of a manufacturing region, where readjustments of the industrial system must from time to time be made. The well-educated business community can make such readjustments with greater quickness and with far less friction than the same readjustments would require in a community not so well educated. In

this sense, New England has a distinct commercial asset of great value in its schools and colleges.

But does intellectual and political leadership go with superior educational facilities?

Intellectual and political leadership — they ought to go together, and they generally do — are not the product of intellectual alertness alone. The ability to think is a necessary factor, but not the only one. Political leadership is the outcome of effective citizenship; and citizenship, to be effective, must include not only the intellectual quality, but also a sympathetic understanding of men, the ability to comprehend the view-point of other men and of other parties. No man, no association of men, and no geographic section can hope to lead in national affairs by intellectual keenness alone.

There has been much talk concerning the fact that this country has of late years got into the habit of choosing its Presidents from Ohio, and one hears a certain amount of ridicule cast upon what is called the "Ohio type." I am not here to defend the Ohio man. He probably needs no defender,—he certainly needs no assistance in getting office; but I am inclined to think that there is something more than the pressure of political exigency to be seen in the continued choice of men from the region of Ohio for high public office. Ohio and its section lie in the great highway between the East and the West, between the North and the South. It reaches up to the great lakes on its northern boundary, and touches hands with the South on the Kentucky shore. Settled in large measure by men from New England and Virginia, its sons retain the traditions of their ancestors. Yet, with the instinctive vision of the pioneer, they reach out kindly hands to people of other sections and of other faiths. It is a far cry from the New England manufacturer to the man who is cultivating olives back of San Diego: there is little in common between the man growing cotton in Georgia and the man mining or cutting lumber in Washington; but Ohio is in the midst of all of it. To go anywhere, one must go through Ohio, unless he puts out to sea. As a result, there has been developed in this section a type of man, of whom President McKinley was the supreme example, who comes

nearer than any other American thus far developed to understanding our manifold interests, one who is in closer touch with the diverse problems of our American politics. And this ability to understand is a source of power and of leadership.

It is a frequent commentary upon our methods of political education that the most insignificant geographic divisions are often allowed to isolate a people from those near akin to them in blood and in social history. A small mountain range, a narrow sea, or an imaginary boundary line, has more than once sufficed to bring about political isolation.

In 1845 Mr. Gladstone, then just beginning his long career in public life, wrote thus to a friend: "Ireland is likely to find this country in Parliament so much employment for years to come that I feel rather oppressively an obligation to try and see with my own eyes instead of using those of other people, according to the limited measure of my means. I am desirous to know whether you are at all inclined to entertain the idea of devoting the month of September to a working tour in Ireland with me, with the purpose of looking from close quarters at the institutions for the religion and education of the country, and at the character of the people." This plan seemed a wise one for a rising young statesman; but, curiously enough, the trip was never made. I do not know whether Mr. Gladstone's experience in this respect was a unique one amongst English statesmen, but it would be quite in accordance with the usual order of things if most of those who have dealt with the Irish question for the past hundred years have chosen to do so without troubling themselves to make the short journey across the Irish Channel and to study the conditions at first hand.

Perhaps, after a while, our country will grow so large, its interests will become so complex, that we will require our statesmen to take a four years' course of preparation in interstate and international studies, as we now expect our professional men to do; and particularly might this be done in the cases of those whose tenure of office is for life, as is practically the case with members of the United States Senate. Under such a plan a senator-elect from a New England State might spend a year in the South, learning, not

by a hurried trip, but by actual residence, the economic and political questions which confront that section. He could pass another year in the Central and Western states, and a third in making the acquaintance of Canada and Mexico and our South American and West Indian neighbors. And the last year might be given to a visit to the Asian coast, the Philippines, and Europe, including Russia. The Southern and Western senator would begin his course by spending a year in New England.

The plan sounds very academic and impractical, but it is difficult to see how such a preparation would do any harm to a man who was about to begin a service of many years in the United States Senate. Perhaps it might have a tendency to make his view of public matters less local, and even to put questions like that of the tariff in the list of general economic problems rather than to leave it a matter of local and individual barter.

New England has had three Presidents in the one hundred and twelve years which have elapsed since Washington's first inauguration. Each of these served one term of office. Men of our generation may well hope to greet another New England President, and may well aspire to make New England a strong factor in determining the policy of our government; but this will come about in just such measure as our citizenship is one of the whole country, and not of one section. The probability of our public men being chosen for the great office of President of the United States will increase in just such measure as they deal with national problems from the view-point of the whole country and the whole nation rather than from local and temporary considerations; and the total influence of our people upon intellectual and political relations will grow in just such measure as we keep in close contact with our countrymen in the South and in the West. And for my part I should like to include in this our neighbors of the North and the East, for in this day a nation does not live to itself any more than does the individual.

As one reviews the work of the past one hundred years in New England, there is no part of it to which we can point with greater pride than to the growth of industry and manufacture. In Hamil-

ton's paper, now become a classic, "A Report on Manufactures," submitted to Congress in 1791, he enumerates some seventeen industries "which have grown up and flourished with a rapidity which surprises us and which furnishes the assurance of future attempts." With the growing market west of us, the enterprising men of New England threw themselves heartily, at the beginning of the last century, into the development of manufactures. The enormous growth of our industrial plants, the facility with which they have met competition, the success with which they have undertaken readjustments of trade, have been alike creditable to New England's energy and to New England's quality of administration. There needs only to be continued similar energy and courage, coupled with the best modern training, to maintain our industrial leadership and to extend it. And in this effort, which lies at the very heart of New England's prosperity, the significance of such a school as that in which we meet to-day can scarcely be overestimated. Industrial progress, industrial success, and industrial leadership can be secured and held only when it rests upon the sure foundation of industrial education; for education and training have come to mean in our day something other than academic knowledge. They mean the training of all the powers of the man, that they may be brought to bear efficiently upon the problems before him; and, if a nation is to equip itself for every side of intellectual and industrial endeavor, the education and training of its students must be provided for, not in one direction alone, but in many. It is only a part of the education and of the training which a nation demands when the minister has been fitted for his pulpit, when the lawyer has been made ready for the bar, when the scholar has been sent into the field of research. All these are necessary, are noble, are splendid; but they reach, after all, only a small minority of humanity, excepting by those indirect influences which permeate society. They do not deal with the direct problems by whose solution each individual citizen is to be made an effective unit in the dynamic economy of the nation. In order to do this, in order that a nation may be made up of men who reach maximum efficiency, education and training must reach down to each individ-

ual citizen, whatever his calling. This is the day of the trained man, and it is the purpose of such a school as this to send out men trained in the textile arts. There is no other form of education to which the State may lend its aid which will in the end bring so large a return as technical education, not only in increased wealth, but also in increased moral power; for efficient training brings not only increased power of thought, but increased moral power as well. The efficiently trained man, whether he be engineer or architect, or foreman or skilled laborer, is a strong moral factor as well as a strong economic factor in the work of a nation; and, as we stand here to-day to dedicate to the uses of the Lowell Textile School buildings which are the joint gift of the Commonwealth and of individual public spirit, we may well say that such an effort, and the development of such a centre of training, is the most effective step which New England can take toward that industrial leadership for which it aspires, and which can come only through organized training.

Commerce, which Lord Bacon links with industry, and which should go hand in hand with it, is another field of national greatness in which New England may well expect to lead. A manufacturing community needs, in the very nature of things, to interest itself in commerce as well. In our day this need is accentuated by the fact that the raw products are coming to form a constantly increasing part of the cost of manufacture. New England, and Massachusetts in particular, must develop the problems of commerce and of transportation side by side with that of manufacture, if it looks for supremacy in either. And the problem of transportation concerns itself no less with transportation by land than by sea. If we ever expect our Boston ships to go, as they once did, to all parts of the world, we must develop at the same time between Boston and the interior ample and efficient lines of transportation,—lines that are not alone able to care for the traffic, but which are devoted to our interests as well.

There was a time in the past when the merchant fleets of Boston sailed in all seas and traded in all ports; and there was a time, not many years ago, when a number of the most important

railroad lines of the interior were owned in Boston. The Civil War swept out of existence the merchant marine, and the railroads have been sold to men in New York. Our very education seems to have been away from commerce. If we are to make in the twentieth century a new effort for a rôle in foreign and domestic commerce, it will be necessary to study the whole problem afresh. It is true we are gaining in the commerce of our port, but our foreign trade as compared with New York is still very small. Last year, of the whole foreign trade of the country, New York had about 45 per cent., and Boston little more than 8 per cent., exceeding by only a small amount that of New Orleans. If we are to strive for the prize of the world's commerce, two things seem to me necessary. First, the whole problem of transportation of the sea and of the interior must be taken up as a single problem. Second, we must do it ourselves. I have no question that the citizens of Massachusetts would have been gainers, many times over, had they begun twenty years ago and dredged their harbors themselves instead of waiting the slow, if generous, policy of the United States government. A splendid appropriation has been made by Congress for this work, and in time we are to have a channel into Boston thirty-five feet deep. At the same time our generous government is expending a similar appropriation in dredging a channel into New York Harbor forty feet deep; and I have an idea that, as long as we leave it to the government, the New York channel will be about five feet deeper than ours.

Natural facilities unquestionably count in the development of a great harbor, but the business of a port depends in larger measure than ever before upon the enterprise and far-sightedness of its citizens. Venice, whose commercial history is perhaps the most wonderful of the world, developed its shipping under conditions singularly unpropitious. By her energy and genius for commerce she sent her fleets to distant shores, controlled the destinies of empires, and acquired a naval power which is unique in history.

We have on our coast an example of the fact that great natural facilities do not alone make a great port. As one glances at the eastern shore line of the United States, the capes of the Delaware

and of the Chesapeake at once catch the eye as entrances to great interior waterways. Chesapeake Bay, the lower of these two, is one of the most remarkable bodies of water in the world; and into it, from the west, flow a series of splendid streams. Almost opposite the entrance to the capes lies a great estuary of the bay, forming the mouth of the York River. On its shore lies old Yorktown, and here in 1781 came the fleets of De Grasse to help Washington force the surrender of Cornwallis. It is one of the finest natural ports in the world,—a great basin from six to ten fathoms deep, and sheltered on all sides. Any vessel that can enter the capes of the Chesapeake may cast anchor there. Back of it lie the great coal fields of West Virginia, and by direct route the grain fields of the West. To almost any other country such a harbor would be a priceless possession. To-day York River is almost unused. A great commerce goes day by day and month by month past its very mouth, traverses the whole length of the Chesapeake, and is dragged up a narrow channel to Baltimore; but not an ocean-going vessel enters York River Basin. In a word, natural facilities form only one factor in the commercial development of a port. And the commerce of our harbors will depend, and increasingly so, upon the foresight, the administrative faculty, and the enterprise of our citizens.

Through all the great enterprises of commerce on the sea there has run a thread of adventure. It was a fitting title which the old commercial companies chartered by Henry IV. were given when they were called "merchant adventurers." Their enterprises among the colonies of North America and along the Spanish Main appealed not only to their commercial genius, but to their spirit of adventure as well. And it is of the essence of world commerce that it should keep alive this old-time spirit. The merchants of Hamburg, in the splendid commerce which they have developed in the last twenty years, have shown that they still retain this old-time spirit of adventure. To-day German commercial expeditions, generally called exploring parties, are penetrating all the remote corners of the earth,—New Guinea, Africa, the Hinterland of the Amazon. These are not sent by the government, but are fitted

out and maintained by the great commercial houses of the Hanse cities, and are evidence of the survival of that spirit which made the old Hanseatic League so great a power; they are reminders of the days when the merchants of the League banded together against piracy, and when they enforced their supremacy even in the ports of England. They were "merchant adventurers" then, and they are "merchant adventurers" to-day.

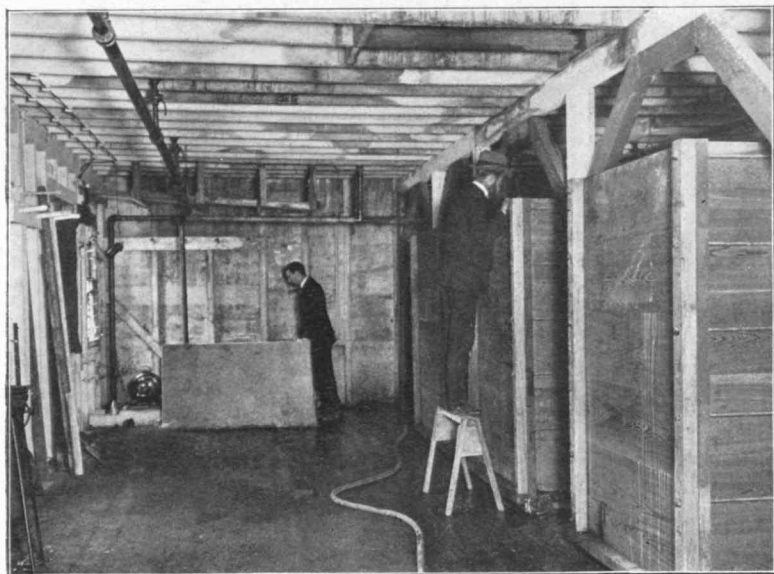
No other prize of wealth is so dazzling in magnitude and in richness as that which the world's commerce holds out. In comparison with it the gold of Ophir and the diamonds of Golconda lose their lustre; but that state which aspires for a share in it must be ready to say, with Romeo,

"I would adventure for such merchandise."

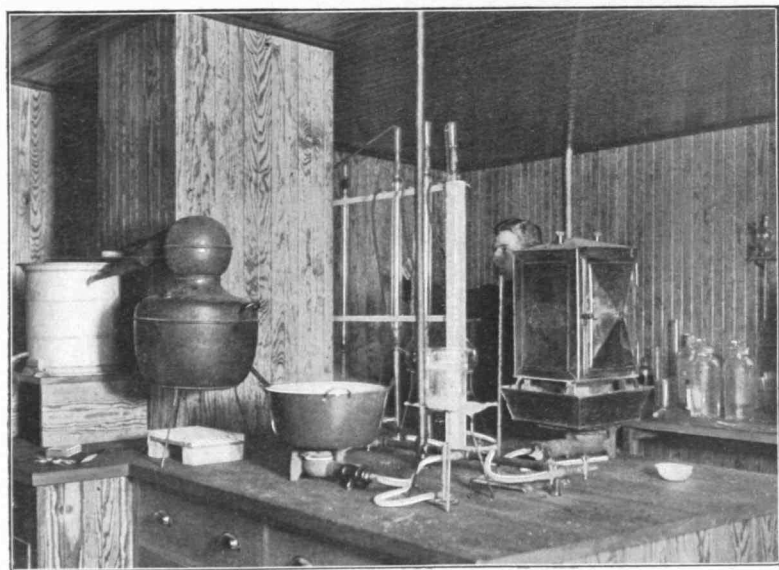
Perhaps it is in part due to this thread of adventure and romance which runs through the world-traffic that literature and art have ever followed close in the path of such commerce. The golden days of Venice came with her commercial supremacy; and the literary epoch of New England, the age which gave birth to Lowell, Longfellow, Holmes, and Emerson, was that in which we covered the seas of the earth with our sails.

As men of New England looking down the vista of a new century, let us estimate at a true perspective its value and its opportunities; let us gird ourselves for a share in the leadership of the nation and of the world. Let us look forward and not backward,—toward the rising, not toward the setting sun,—so that, when the men of New England foregather at the dawn of the twenty-first century to estimate the fruits of the century behind them, they may rejoice that there still remains in the old home of the Puritans a full share of leadership,—a leadership in intellectual and political progress, and in commercial and industrial progress as well.

HENRY S. PRITCHETT.



Tanks for Experimentation



A Corner of the Sanitary Research Laboratory

THE NEW RESEARCH LABORATORIES AT
THE INSTITUTE

THE RESEARCH LABORATORY OF PHYSICAL CHEMISTRY

It is extremely gratifying to feel that, at the very time when the Institute is growing in numbers at a rate greater than ever before, its government has taken a determined stand in support of the principle that the needs of the undergraduate instruction must not be allowed to check the development of advanced study and research, by which alone the Institute can maintain its prestige among other similar institutions. In the January number of the REVIEW was presented a full description of the Graduate School of Engineering Research to be opened at the beginning of the next school-year. It is now announced that, assisted by several gifts made for the purpose, the Institute Corporation has voted to establish and equip at once a Research Laboratory of Physical Chemistry, to be devoted exclusively to research work in that important subject. Thus purely scientific investigation, as well as the study of new engineering problems, will no longer form merely an incidental part of the work of the Institute, but will be especially provided for. Moreover, a friend of the Institute has made it possible to equip a laboratory for sewage investigations, to be known as the Sanitary Experiment Station, the work in which is to be conducted mainly by members of the Biological Department of the Institute. It is the purpose of this article to give a brief account of the equipment of these two new research laboratories, and of the character of the work to be pursued in them.

The Research Laboratory of Physical Chemistry is to occupy one of the new buildings now being erected on Trinity Place beyond the Pierce Building. It will consist mainly of a series of small laboratories, each of which will afford ample accommodation for two workers. A shop well equipped with machine tools, including an engine lathe, speed lathe, and a bench lathe, and with

a large variety of stock, will form a part of the laboratory. In this shop a skilled instrument-maker will be regularly employed in making and repairing apparatus for investigation work. Rooms for special purposes — weighing, photographic work, glass-blowing, pure water distillation, storage of chemical and physical apparatus, and the holding of lectures and seminar meetings — will adjoin the laboratories. Each separate research laboratory will be connected with a 220-volt direct circuit and with systems for supplying ordinary and distilled water, gas, steam, suction, and blast. Sets of standard measuring instruments and apparatus to serve for purposes of comparison and calibration will be provided.

The researches will be carried on in large part by a staff of salaried Research Assistants and Associates, working under the direction of those Professors of the Institute who are connected with the subjects of Theoretical or Physical Chemistry. The staff for next year will consist of nine or ten members. Every facility will also be offered to advanced students who wish to do research work in this branch of science, either with or without reference to an advanced degree.

The members of the Research Laboratory staff will offer a number of advanced lecture courses and will conduct seminar meetings, which may be attended by all those engaged in the research work, including advanced students. Every one in the Laboratory will participate in bi-weekly meetings at which reports on the researches in progress will be presented, whereby each one will be kept in close touch with the work of the others. There will also be bi-weekly meetings at which recently published articles of physico-chemical interest are reviewed.

It will be seen from the foregoing statements that the Research Laboratory will offer unusual opportunities for a thorough scientific training in Physical Chemistry to a limited number of properly prepared students. The fact that it is intended primarily for research rather than instruction is an advantage to such students, especially because of the association which it affords with a considerable number of men devoting themselves almost wholly to investigation.

To illustrate the nature of the proposed work, it may be of interest to mention some of the lines of investigation to be pursued next year. Much attention is to be given to the study of aqueous solutions at temperatures from 100 to 360 degrees (the critical temperature), especially through measurements of their electrical conductivity; for in this way not only will light be thrown upon the change of physical properties through wide ranges of temperature, but also upon the chemistry of dissolved substances under these unusual conditions, which, however, may be met with in geological processes or in industrial operations under high pressure. In a separate research the constants which serve to express the electrical conductivity of acids and bases will also be exactly determined by electrolysis experiments. Investigations on the electrical conductivity of fused salts and on the heat expansion of alloys will be carried out. The cause of the change in color with the concentration and temperature of certain salt solutions, such as those of copper and cobalt, will be studied. Finally, an especially promising field of work to be pursued is that upon the properties and behavior of colloidal substances.

The maintenance in connection with universities of observatories for original work in astronomy has long been a common practice; but it is a rare thing for an institution of learning to establish a laboratory of physics or chemistry devoted specifically to research work. The Institute is, therefore, to be congratulated upon being a pioneer in this important extension of educational work. Not only is a laboratory of this kind of direct value because of its contributions to the advancement of science, but it reacts in many ways upon the instruction work of the institution with which it is connected, in such a manner as to raise it to a higher grade.

ARTHUR A. NOYES, '85.

THE SANITARY RESEARCH LABORATORY AND SEWAGE
EXPERIMENT STATION

With the growth of cities as perhaps the most significant fact in modern social development, the disposal of the wastes of the municipality has become a serious and difficult question. In the United States the suit brought by the State of Missouri against the State of Illinois and the Chicago Sanitary District, to restrain the latter from the use of the great drainage canal, lately constructed at a cost of some \$35,000,000, has drawn public attention strongly in this direction; and the steps now being taken by the Massachusetts State Board of Health to prevent pollution of the watershed of the Neponset River promise to furnish a test case of unusual interest.

Previous experimental work upon the sewage problem has been to a remarkable extent carried on by Technology officials, graduates, or former students; and it is fortunate that just at this time the Institute has been given an opportunity to maintain its prestige in this direction through the establishment of a Sanitary Research Laboratory for the further experimental study of these questions with special regard to the purification of the sewage of large cities. This step has been made possible by the gift of \$15,000 from a generous friend of scientific investigation and education who prefers to remain anonymous. The far-sighted but practical purposes of the donor have been outlined by him under five general heads as follows. He desires the fund to be expended:—

“(1) In keeping up with the investigations of the best men in all countries.

(2) In utilizing this knowledge in the Technology work.

(3) In original experiments.

(4) In distributing all over our country, in such words that they who run may read, the results of the work; and

(5) In inciting students to make plain, simple statements of scientific truths.”

In accordance with the first clause of this well-considered “deed of gift” provision has already been made for such additions to the library of the Biological Department as shall make it fairly com-

plete along sanitary lines. The last two objects are to be attained by the publication, beginning in the near future, of a series of short sanitary tracts which shall present the elementary facts relating to the public health in as clear and simple a form as possible. The major part of the gift, however, will be devoted to the maintenance of an experiment station and laboratory for original research on the various branches of the science of sewage purification, and for the practical demonstration of the principles and methods of sewage disposal for the benefit of Institute students and of the general public.

The Director of the new laboratory, Professor W. T. Sedgwick, has been fortunate enough to secure an excellent and convenient location on the line of Boston's largest main sewer at a point below the discharge of the entire city proper and Allston and Brighton. For a study of the sewage of a municipality of the first rank the opportunity is believed to be unique. The property leased by the Institute for the laboratory and station is situated at 786 Albany Street, near the corner of Massachusetts Avenue, and opposite the South Department of the Boston City Hospital. It covers about a quarter of an acre of land, occupied in part, when first secured, by a two-story frame office building and a large stable. To-day the offices have become laboratories, an upper for chemical, a lower for bacteriological work. Some half-dozen investigators can be accommodated here; and, although strict regard has been paid to simplicity and economy, the office building, as now equipped with gas, electricity, and running water, and with stills, drying ovens, water-baths, sterilizers, incubators, and glassware, is in excellent condition for good work.

The two-story stable has been transformed into a tank and filter house where the most important processes of sewage treatment are illustrated upon a practical scale. In the loft, and well above the second floor, are three supply-tanks, of cypress, having a combined capacity of 1,000 gallons, while below them are ten cypress tanks for the so-called preliminary treatment of sewage, each resting on the second floor and having a capacity of 72 cubic feet. Of these tanks, two are filled with sand for demonstration

of the purification of sewage by intermittent filtration,—long since exhaustively studied at the Lawrence Experiment Station of the State Board of Health of Massachusetts; one is to be used for sedimentation alone, one for chemical precipitation, and the remainder as septic tanks in which special conditions of rate, temperature, etc., are to be studied in detail. On the ground floor are ten more large tanks for continuous and contact filtration. Four are to be used as double contact, four as single contact beds, and two for purification by continuous filtration; various filling materials, coke and several sizes of broken stone, being provided for study. A measuring tank for effluents, and a two horse-power alternating single-phase electric motor connected to a 4 x 6 Warren pump, complete the main features of the equipment.

Professor Dwight Porter and Professor H. P. Talbot have consented to act as consulting engineer and consulting chemist respectively. The active force, besides Professor Sedgwick, the Director, includes Mr. C.-E. A. Winslow, '98, Biologist-in-charge, Assistant Professor Prescott, Mr. E. B. Phelps, '99 (who comes from the Lawrence Experiment Station of the State Board of Health to undertake this work), Research Bacteriologist and Chemist, Mr. G. R. Spalding and Mr. F. W. Farrell, both of '04, Laboratory Assistants. Miss A. F. Rogers, who has been engaged in the investigation of bacteriological problems at the Institute during the past winter, has also been appointed Research Assistant. Several students who desire to gain a practical knowledge of the bacteriology of water and sewage are also to work in the laboratory as volunteer assistants.

It is hoped that the experimental work of the station may, in the first place, clear up some points of importance in the actual operation of the more modern systems of sewage disposal, which are still unsatisfactory or obscure. In particular, the attempt will be made to look into the future and consider practical processes for dealing with the sewage of large cities, many of which are to-day using methods of disposal which it may eventually be desirable and even necessary to abandon in the interests of the public health. In the second place, freedom from the routine work to which some

laboratories are necessarily devoted will make possible an attention to certain fundamental problems, such as the exact chemical composition of sewage and the biology of the bacteria active in its purification,—problems whose solution must lead to progress in the technical and engineering applications based upon the principles involved. Finally, for the purpose of demonstration to students of sanitary engineering, sanitary chemistry, sanitary biology and the public health, the laboratory and station will furnish opportunities such as are probably possessed to-day by no other educational institution in the world.

C.-E. A. WINSLOW, '98.

THE COURSE IN NAVAL ARCHITECTURE

This being the tenth year since the Course in Naval Architecture at the Institute was established, there may be some interest in an account of the course and what it has accomplished, especially now that the Navy Department has selected the Institute to give professional instruction to officers designated for the corps of naval constructors.

In a certain sense this course is a natural growth and development of the work at the Institute, and has the sturdy vigor and individuality of such a growth and of our organic unity with related courses, which is one of the most wholesome characteristics of the entire policy of the Institute. In these days of narrow specialization, especially in connection with so well defined a specialty as naval architecture, it is fortunate that the fundamental unity of all the professions that deal with construction should be recognized, and that the student growing up in such an atmosphere should come to consider that unity as a natural and inevitable condition. It was fortunate also that the several related courses at the Institute were so developed that the fundamental training

which leads up to the specialties of the profession of a naval architect could be readily adapted to the needs of the new course, and that, in consequence, attention could be concentrated on the subjects that pertain to the profession. They could thus be immediately presented in an adequate manner, even though the profession is without the manuals and text-books that have grown up with long experience in teaching engineering at the Institute and at other American and foreign schools and colleges.

As leading up to the establishment of the course and explaining its development, a brief statement of preliminary work may be proper. In 1886 the course in mechanical engineering offered three options in the fourth year, one of them in marine engineering; and two years later it was suggested by General Walker, who took much interest in the matter, that some instruction should be given concerning the ships for which marine engines are built. An attempt to make this preliminary instruction sound as far as it went immediately excited much interest, and called for so much time that in 1890 an option in naval architecture was established, with the expectation that it would soon grow into a separate course. Some of the graduates from that option now hold positions of responsibility in their profession. Three years later the Institute was in condition to offer a regular four years' course in naval architecture on a level with other courses in engineering and construction. Since that time there has been little formal change in the schedule of the course; there have been, however, material improvements in methods and results both in the presentation of the theory and in the training in drawing and design, until it may fairly be claimed that the course is now equal to those of the established schools abroad, and that its methods are better adapted to the conditions of American ship-yards.

There have been nine classes graduated from the department of naval architecture, comprising eighty-five men in all; and a number of students have taken special instruction not looking toward a degree, among whom are several graduates of other colleges. About 80 per cent. of these are now engaged in their chosen profession, and half of the remainder are at work in related engineering

pursuits. A notable feature of the course is the relatively large number of students who have been attracted to it from other colleges, which follows naturally from the fact that there are only a few technical schools and colleges which offer such a course.

In 1902 the chief constructor for the Navy Department requested the Institute to offer a special course of study, extending over three years, for the professional training of naval constructors. The Institute cordially responded to this request, and a course of study was agreed upon as satisfactory to both parties. After a year's experience and a more intimate acquaintance with both the course for midshipmen at the Naval Academy and the methods of the Bureau of Construction and Repair, the course was modified and improved. The changes, however, were not so great but that the first class could substantially meet them and have the benefit of the modifications. That year the Navy Department sent a class of three midshipmen who had completed two years of the course, and the next year another class of four were sent to the Institute. The pressure of work on the corps of constructors is such that extraordinary means appeared necessary to increase its numbers; and consequently five more midshipmen were sent this spring, who by special work in the summer are to be fitted to join the class that entered regularly the previous fall, thereby raising the number of that class to nine. It is to be expected that a few midshipmen will be sent each year to meet the regular demands of the corps.

The relation of these officers (midshipmen and assistant naval constructors) to the Institute is very fortunate. Officially, they are attached to the Navy Yard at Charlestown, and are registered as regular students at the Institute in a course adopted by the Faculty as a graduate course in the department of naval architecture, leading to the degree of Master of Science. Intimate relations are maintained with the chief constructor and with the constructors at the Boston Navy Yard and at the Fore River Ship and Engine Company, so that they may know that the instruction is adapted to the needs of the service; and, on the other hand, the Institute can direct its efforts to the best advantage, and can use the work under construction at both those places to illustrate its teachings.

For example, the schedule of work at the Institute is laid out so that an afternoon per week can be spent at the Navy Yard, where methods of administration and other matters may be learned under the direction of the constructor; and from time to time the Professor of Naval Design may take his classes to the Fore River Yard to observe the work there under construction, and apply the newest methods to his instruction in warship design. In addition the midshipmen and assistant naval constructors are sent by the Bureau of Construction and Repair during the summer to inspect work in progress in other ship-yards and in steel works. It may be added that these young officers are selected for their fitness for this work, and that they show an enthusiasm and ability which cannot fail to lead to success.

While a schedule of studies like that found in the catalogue of the Institute would be out of place here, it may be well to give a general view of the work of the regular course and of the course for naval constructors. As is well known to readers of the REVIEW, all courses are substantially the same during the first year; and even in the second year there is more similarity than difference, only such courses as chemistry and biology showing a marked divergence from the construction or engineering course. And this can hardly be otherwise, since the first two years give the broad foundation of chemistry, physics, and mathematics on which the diverging specialties of the later years are based. The similarity is even more marked, if account is taken of the culture studies, like history, English, literature, and modern language. In common with the engineering courses, naval architecture takes mechanism and drawing in the second year and applied mechanics and steam engineering in the third and fourth years, with laboratory practice and shop-work.

In the third year of the regular course, students take lectures in ship construction and in the theory of naval architecture, including in the latter such work as displacement and stability of ships and their applications to such general problems as grounding, docking, flooding compartments, and launching. In the fourth year they have instruction in hydrodynamics and its applications to waves, and their effect on the rolling of ships, and also to the

stream lines about ships ; in resistance and propulsion ; in steering and manœuvring ; in ventilation and drainage ; and in the adjustment of compasses. The descriptive and theoretical work of the third year is accompanied, first, by instruction in ship-drawing and in the design of a sailing vessel or yacht. Afterwards each student takes up the design of a steamship for a specified purpose, and gives to the problem the remainder of the time devoted to drawing and design. He determines the form and dimensions, the framing and general arrangements, the weights and displacements, the centre of gravity, trim and stability, and the strength in still water and among waves ; he also draws off the specifications and makes launching calculations.

Parallel with the design of the ship is the work in marine engineering, which gives a description of marine engines and methods of determining proportions and dimensions and of computing stresses in the several parts. Consideration is also given to the vibrations of ships and balancing engines. Each student makes a preliminary design of the engine for the ship he is designing, and also the computations for stresses and for the dynamic actions that tend to produce vibrations.

The course for naval constructors takes up the work of the regular course at the third year, and adds to that course a graduate year, as has already been said. It includes applied mechanics, steam engineering and marine engineering, and has special courses in chemistry of organic substances, heating and ventilation and sanitation. All the theoretical work of the regular course is taken and, in addition, a year of advanced and special theoretical work in naval architecture.

The largest and most important single subject of this graduate course is warship design, in charge of the professor of naval design, who has been engaged for this special purpose. This work is treated by a continuous course of lectures on naval design throughout the three years of the course, together with the design of a warship by each student, including all the computations and drawings proper for that purpose. During this design the students make numerous inspections of work in progress for the navy at the Navy

Yard and at the Fore River Yard, and have access to drawings of completed ships in the navy and of ships in process of construction, together with other necessary data to bring their work in line with the latest practice of the Bureau of Construction and Repair.

The lectures on naval design begin with an historical account of the development of warships, treating separately the important classes of battleships, cruisers, and torpedo vessels. In this profession, more than in most others, the best foundation for a broad idea of the problem involved is a knowledge of previous development. Consequently, these lectures are cast in the form of a discussion of the various types of ships and their development, showing the relations of cause and effect rather than a complication of names and figures. This historical basis is followed by a discussion of the principles governing the choice of the elements of a design and the arrangements of its principal features, such as the hull, the machinery and fuel, the armorment and the protection. The aim is to give instruction and data that are directly applicable to design.

The design work includes the determination of the form, size, and nautical properties required for a ship of the class under consideration to carry a certain battery and armor protection, and to attain a required speed and radius of action, together with accommodations for officers and crew.

After a preliminary determination of the principal dimensions, the lines, the power, and other general features, elaborate calculations are made for weight, stability, and strength by the standard methods of the Bureau of Construction and Repair. At the same time drawings are made of the general arrangement, of the midship section, and of other general structural features. Particular attention is given to the disposition of guns and torpedoes, to the location and arrangement of magazine, and the transportation of ammunition, to the distribution of armor, and to water-tight subdivision; that is, to those elements which bear directly on the military qualities of the ship. Attention is given to the location and arrangement of engines, boilers, propellers, and coal-bunkers, with particular attention to ready stowage and transportation of coal. Finally, plans are made of accommodations for officers and

crew, with location of store-rooms and provision for ventilation and drainage.

Considering the extent to which electricity enters into the working of a warship, a large amount of time has been assigned to electricity and electrical engineering. All the theoretical work of the regular course in electrical engineering which bears on the application of electricity to ships is taken, and to this is added a long and thorough course of electrical engineering specially laid out to meet the needs of the course. This theoretical work is accompanied by practice in the physical and electrical engineering laboratories. All this work is under the supervision of the professor of electrical engineering who was himself formerly an officer in the navy.

A graduate course in naval architecture is now offered, leading to the degree of Master of Science, for graduates of the course in naval architecture who desire advanced instruction and especially in warship design; and arrangements are made to allow graduates from allied courses at the Institute, and from other colleges, to take all the professional work of the course in naval architecture in one year.

CECIL H. PEABODY, '77.

GENERAL INSTITUTE NEWS

CORPORATION NOTES

The two hundred and ninety-seventh meeting of the Corporation was held at the Institute May 27. Appointments by the Executive Committee were confirmed as follows:—

A. H. Gill, Assistant Professor of Technical Analysis; W. R. Whitney, Assistant Professor of Theoretical Chemistry; H. M. Goodwin, Associate Professor of Physics; J. O. Sumner, Associate Professor of History; F. S. Woods, Associate Professor of Mathematics; C. L. Adams, Assistant Professor of Drawing; H. W. Gardner, Assistant Professor of Architecture; F. P. McKibben, Assistant Professor of Civil Engineering; S. C. Prescott, Assistant Professor of Industrial Biology; C. M. Spofford, Assistant Professor of Civil Engineering; L. P. Chapin, Instructor in Inorganic Chemistry; W. H. James, Instructor in Mechanical Engineering; C. E. Littlefield, Instructor in Chipping and Filing; L. S. Smith, Instructor in Mechanical Engineering; C. M. Swan, Instructor in Physics; J. L. Wayne, Instructor in Mechanical Engineering; John Wesley Brown, Instructor in Theoretical Chemistry; Carroll Warren Doten, Instructor in Economics; Douglas Wilson Johnson, Instructor in Geology; Charles M. Mason, Instructor in Mathematics; Miles Standish Sherrill, Instructor in Analytical Chemistry; Hervey Woodlawn Skinner, Instructor in Geology; W. E. Burkhalter, Assistant in Civil Engineering; William Robert Davis, Assistant in Civil Engineering; James Madison Gammons, Assistant in Physics; Howard Scott Morse, Assistant in Civil Engineering; Arthur Edgar Nash, Assistant in Inorganic Chemistry; John Ripley Odell, Assistant in Industrial Chemistry; Frederic Arthur Olmsted, Assistant in Industrial Chemistry; George A. Sampson, Assistant in Civil Engineering; William David Coolidge, Research Associate in Physical Chemistry; Herman C. Cooper, Research Associate in Physical Chemistry; Charles S. Ryan, Research Assistant in

Chemistry; Raymond Haskell, Research Assistant in Chemistry; Arthur Clarke Melcher, Research Assistant in Chemistry.

Reports were presented by the Visiting Committees on the several professional departments. It was voted, on recommendation of the Executive Committee, to approve the erection of a building on the corner of Trinity Place and Stanhope Street at a cost not exceeding \$35,000.

The two hundred and ninety-eighth meeting of the Corporation was held at the Institute on Friday, June 5. The Master's degree was conferred on the following candidates: Isaac Rayne Adams, Homer Eugene Bartlett, Donald Minor Belcher, William Roger Greeley, Frederick Huston Hunter, Charles Wetmore Kellogg, Jr., and Walter Purton Ross Pember; and the Bachelor's degree was conferred on 192 candidates. The Hon. Winthrop Murray Crane, of Dalton, was elected a member of the Corporation.

The April REVIEW contained an account of proceedings in the Institute's application to the legislature to be given the title of the land occupied by the Rogers and Walker Buildings. Following the hearing mentioned, the bill was passed by the House of Representatives, three hearings were held by the Senate Committee on Ways and Means, and another by the governor. The bill was in the end enacted by both houses and signed by the governor, leaving the Institute free to build over the whole of the land in question or to sell it in due time with a view to removal. The remonstrants included some of the abutters on Berkeley and Newbury Streets, but other owners either favored the Institute bill or remained neutral.

The essential issue turned on the expression in the act incorporating the Institute that the land in question should "be reserved from sale forever." The remonstrants contended that this passage in the act gave them certain inalienable rights. The Institute representatives maintained that the State had always the right to change its intention, and that every abutter had acquired his land subject to that right on the part of the State; that, if the abutters had any equitable claim for damages incurred, the courts would protect them against the Institute or any other future owner

of the land ; finally, that it could not be shown that actual damage would result to the abutters. Apart from this somewhat technical question much emphasis was laid on the larger aspects of the situation, the State's original intention to make adequate provision for the Institute, and the corresponding justice of renewing such provision ; and, on the other hand, the fact that the entire vicinity is inevitably changing its character to that of a business or professional quarter. The case of the abutters was presented by a considerable array of counsel and not without some acrimony, which may in the end have reacted to their disadvantage. One of the remonstrants made what was enthusiastically received by his associates as a most telling point by reading a sentence from Dr. Pritchett's *Outlook* article in regard to the acceptance by an institution of land or funds from questionable sources. It seemed not to occur to the gentleman using this rhetorical device that he was in fact begging the main question, which was not one of honesty, but of rights, whether legal or moral.

A somewhat curious phase of the situation is the reference of the parallel bill in behalf of the Society of Natural History to the next General Court. The question of choice of a future location for the Institute will now be studied with renewed vigor and interest, but no conclusion is probable during the near summer months.

PROFESSOR HENCK

At the Faculty meeting of April 22 the following resolutions presented by Professor Swain were unanimously adopted : —

Resolved, That the Faculty has learned with deep regret of the death of John B. Henck, Professor of Civil Engineering at this Institute from 1865 till 1881, bringing to an end a long life full of useful labor devoted to the practice of his profession as an engineer and a teacher. We call to mind with thankfulness and appreciation the noble work he did for the Institute during his many years of service, in the days of small things. We remember his devotion to his work, the high ideals of scholarship and of character which he set both for himself and for his students ; and we desire to place on record here our sense of appreciation of his work, and of the debt which the Institute and its alumni owe to him, as well as our feeling of personal

loss. We extend our deepest sympathy to his family in their affliction, but it must be to all a consolation to remember that his was a life well spent and of benefit to his fellow-men.

Resolved, That these resolutions be placed upon the records of the Faculty and a copy forwarded to his family.

OFFICERS AND COMMITTEES

At the annual meeting of the Faculty, Professors Tyler and Burton were re-elected Secretary and Dean respectively, and the following committees were elected:—

Publications: Goodwin, President, Secretary, Miller, Pearson, Noyes.

Periodicals and Libraries: Cross, Hofman, Chandler, Bates, Swain, Talbot, Currier, Bigelow.

Petitions: Secretary, Dean, Lanza, Porter, Cross, Pope, Bartlett.

Special Students: Merrill, Wendell, Bailey, Moore.

Rogers Building: Richards, Burton, Tyler, Faunce, Currier.

Walker Building: Cross, Talbot, Derr.

Engineering Buildings: Lanza, Swain, Miller.

Henry L. Pierce Building: Chandler, Sedgwick, Miller.

Lowell Building: Duncan, Rambeau, Puffer.

Five-year Courses: Bartlett, Vogel, Gill, Sondericker, Robbins.

Undergraduate Scholarships: Dewey, President, Secretary, Dean, Merrill, Fay, Niles.

Graduation Exercises: Sedgwick, Schwamb, Bates, Lawrence, Pearson, Park, Sumner, Wendell, Walker.

Entrance Examinations: Bates, Currier, Osborne, Schwamb, Rambeau, Allen, Talbot.

Military Exercises: Richards, Puffer, Swain, Baird, Bailey, Hovgaard.

Provisional Students: Porter, Dean, Bardwell, Wendell, Park, Woods.

First-year Students:* Dean, Sedgwick, Wells, Tyler, Talbot, Rambeau, Pope, Baird, Dippold, Currier, Faunce, Bartlett, Vogel, Bailey, Bardwell, Woods, Skinner, Locke.

*Subject to change: membership determined by rule.

Relations with Secondary Schools: Currier, Bailey, Allen, Clifford, Hough, Vogel, Whitney, Barton.

Summer Courses: Faunce, Woods, Hough, Laws, Lawrence, Norris, Robbins, Lodge.

Advanced Degrees and Fellowships: President, Cross, Lanza, Swain, Chandler, Noyes, Dewey.

Conduct of Examinations: Dean, Secretary, Peabody, Fuller, Norton, Sumner.

Tabular View and Room Scheme: Secretary, Derr, Johnston, Thorp.

Summer Reading: Noyes, Dewey, Bates, Currier, Sedgwick, Moore.

Appointment of Graduates: Secretary, Dean, Walker, Lawrence, Clifford, Miller, Spofford.

Engineering Research: President, Swain, Lanza, Richards, Duncan, Peabody, Cross, Sedgwick, Talbot, Tyler.

Admissions by Examination: Secretary, Burton, Currier, Vogel, Bailey, Gill, Pearson, Wendell.

REPORTS OF SPECIAL COMMITTEE ON COURSES OF STUDY

"Can first-year work be made a more effective test of fitness for more advanced work?"

The sub-committee on this question, after conferring with instructors and examining the records of three recent classes, states that of one hundred students entering in a given year about sixty-four remained for three or more years. Of these about sixteen have poor records in the first year, and of the sixteen about five ultimately graduate in four years or more.

A slightly different analysis for a particular class shows that of one hundred students completing a half-year or more, nearly half had poor records at the end of the first year. Of these about one-third leave at the end of the first year, one-fifth at the end of the second year, one-third at the end of the third year, one-eleventh at the end of the fourth year (without graduation), and one-tenth graduate.

On account of the varying influence of the different subjects of the first year upon the later work of the various courses, and of the undetermined effect of illness and pecuniary difficulties upon the length of a student's connection with the Institute, it is difficult to draw definite conclusions from

these analyses; but the Committee is of the opinion that the results, as a whole, indicate that the first-year work is not seriously deficient as a means of testing a student's fitness for more advanced work.

There appears to be no evidence obtainable from the records which determines whether the standard of work of the upper years has been maintained in the face of the increasing difficulties incident upon the growth in size of the classes. In view of these difficulties it appears desirable that the work of the first year should be made an increasingly thorough test of capacity within the limits of reasonable requirements.

The Committee suggests that the work of the Freshman year might be made more effective by a partial rearrangement of the mathematical course such as is understood to be under consideration, and by the reduction of the size of the sections to be taught by the individual instructors in all subjects. It also indorses the suggestions made by the departments with respect to the desirability of bringing the first-year students into contact with the ablest available teachers, and that additional effort should be directed to the development of mental power in these students.

The Committee is further of the opinion that the first-year records should be more carefully scrutinized by the Faculty at the close of the year with special reference to students who, because of low or weak records, should plan to distribute their work over five years, or should reconsider their choice of a professional course, and that there should be a more systematic treatment of students' records after the results of the September condition examinations are known,—this, in part, in order to secure greater strictness in the treatment of petitions of students who, having serious failures in first-year subjects, desire to undertake the professional work of the second year. This applies to Analytic Geometry in particular; and it is suggested that, in connection with the approval of attendance cards, conferences of the instructors in mathematics, chemistry, and drawing be held during the first weeks of the year to facilitate the better disposition of such petitions. It is also suggested that students who have to repeat first-year subjects should more generally be required to omit a sufficient amount of the second-year work adequately to lighten their load.

The examination of records and the discussions of the main question which this Committee was asked to consider have raised a secondary question with reference to the higher years of our courses, as well as the first year; namely, whether our students are not too generally disposed to be content with the mark of "L" in a subject, and whether sufficient consideration has been given by the Faculty to the recurrence of this mark in the record of a

particular student. The Committee suggests that, in connection with the definition of the mark "L" as it is stated upon the reports sent to parents and students, a statement should be added to the effect that a student who receives a number of such marks may be required to discontinue a part or the whole of dependent subjects, and suggests that the Faculty maintain this position as far as practicable.

"Can discontinuity of work be reduced, and the present number of one hour per week exercises be diminished?"

"Can the present variety of work be diminished, and the number of examinations be diminished?"

The Committee do not feel themselves competent to deal with the details of the studies constituting the several courses. It appears to them, however, that there is as a whole much less to be complained of in the matter under consideration than might reasonably be expected in an institution where so many courses exist, and in which there is such an intimate interlocking of work distributed among the various departments. The most serious trouble appears to have arisen from difficulties attendant upon the adjustment of relative sequence of professional and general studies.

An extended discussion of particular cases follows.

A second subject referred to us is the number of "one hour per week" exercises. There are exercises of this character in all the courses, and many in some of them. There is a general belief among the Faculty, in which the members of the Committee share, that in most cases it is much wiser, when practicable, to have more frequent exercises, with an earlier termination of the series; but this rule is not without exceptions. Such subjects as Free-hand Drawing, Pen and Ink, Sanitary Science, History of the Inductive Sciences, would not gain by concentration, and very likely would lose by it. On the other hand, Political Economy and Industrial History and Business Law would probably be better, on the whole, if concentrated so that two lectures per week were given in the former for half the term, followed by two lectures in the latter for the remaining half. Difficulties might be met with here in arranging the time of some of the instructors, and it is this in part which has led to the introduction of some of the one-hour per week exercises. It is an interesting fact that some of the courses in which the number of such exercises is the greatest find little or no inconvenience from them, but a slight consideration of the particular cases gives a ready explanation. In fact, when the subjects thus given are of a general character, and each lecture is complete in itself, the infrequency of the exercise does not

seem to be objectionable ; and the same is likely to be the case when the one-hour per week exercise is of a professional character, so that it is in the direct line of the body of the work of the student. The courses which seem to give the most trouble are those which do not fall into either of these categories, but which, though perhaps not difficult in themselves, are, nevertheless, of a technical character and removed from the lines of daily departmental work. In these the student is liable to suffer from forgetting the matter of the preceding lecture before the next is given. Moreover, there is a great likelihood that outside study will be neglected with the idea that for so short a course this can be concentrated at the end of the term. Of this character are Elements of Industrial Electricity, Dynamo-electric Measurements, and Metallurgy of Iron.

Prior to the consideration of these subjects by the General Committee the Department of Electrical Engineering had arranged for the consolidation of Industrial Electricity and Dynamo-electric Measurements into a single course for those students taking both subjects. For the other courses it will doubtless be possible to provide a better arrangement shortly.

Changes of the character indicated will tend to diminish the number of different subjects which are taken by a student at one time, which is unquestionably an end to be sought. As to other possible changes in the same direction, the Committee feel that such details can only be dealt with from time to time by the several departments. They believe, however, that there is always a serious danger of having too many separate courses going on at once, and they urge that members of the Faculty keep this in mind in laying out their schemes of study.

In the matter of examinations the Committee find that there has been a very marked improvement during the past few years, so that during the present year there are few cases in which the number can be considered as really excessive. At the semi-annual examinations in 1902 there were eight courses in which eight or more examinations were given. But of these from two to five were brief ones upon fifteen-hour subjects only. At the annuals of the present year only one course has as many as eight, and of these six relate to fifteen-hour subjects. It is true, however, that two brief examinations are in general harder than one examination of double length ; and of course, when men have condition examinations as well, they are very heavily loaded. The largest number of examinations is found where it would naturally be expected,—in those courses which are of a complex constitution.

But, while the Committee do not feel that any abuse exists in this matter, they believe that at times there has been a tendency to give unduly long ex-

aminations on brief courses. The length of the examination should certainly bear some proportion to the length of the courses. A three-hour examination on a fifteen-hour course would seem unnecessarily prolonged when the same number of hours suffices for courses of forty-five or ninety hours. The Committee do not sympathize with the disposition sometimes shown to cover all parts of the subject in an examination instead of selecting certain ones only.

The Committee furthermore feel that greater care than has sometimes been exercised should be taken not to overload the students at examination time. They would suggest, when possible, the consolidation of several examinations in closely related subjects in which short courses are given. They would also raise the question whether in some of the general studies the writing of short themes and more frequent written recitations might not obviate the necessity for examinations if the class is crowded with them. Again, a more extended introduction of the conference system might aid in the same direction. The Committee do not desire to do away with examinations. They value them highly. But the strain upon the students where so many are taken is very great, and a relief from a very few would be of material benefit.

The Committee also desire to call the attention of the Faculty to the fact that, with a reduction of the number of weeks allotted to short courses, a greater number of these will be finished at the end of one-third or one-half of a term. The students will feel, and with justice, that the postponement of examinations upon these until the end of the term is a much more serious evil than that which the concentration of the courses was designed to remedy. The Faculty is therefore asked to consider the desirability of giving a greater number of the examinations than at present at the time when the subject is finished instead of postponing them until the close of the term. If some satisfactory way of doing this can be found, it will afford a welcome relief.

The Committee also suggest that it would be well to consider whether, when the new entrance requirements go into effect, it will not be wise to avoid completely filling up the time allowed by the rules, so as to allow a less hurried assimilation of the subjects taught.

GENERAL STUDIES

An important vote affecting the curriculum has been taken on recommendation of the Committee on Courses of Study, as fol-

lows : That one hundred and twenty hours of the two hundred and seventy now assigned to Modern Languages in the third year shall be reserved in all departments for instruction in General Studies, this time to be distributed in different years of the respective courses as may seem best, with options, if practicable, in various lines of study, including the History of Science.

Beginning with the present year, candidates for admission are required to present both French and German, leading to the completion of Modern Languages a year earlier. The vote just stated preserves nearly half of the time gained for studies of a general character, emphasizing still further one of the most important fundamental principles represented by the Institute : namely, the recognition of general education as an essential part of its work for students in all departments.

FACULTY RULES

The revision of the rules of the Faculty has been completed, the following being the more important changes : —

New standing committees are those on recommendation of graduates for appointment, on the conduct of examinations, on engineering research, on entrance requirements. A new provision of some importance reads, "In the fourth year a candidate for graduation whose record has been generally poor may be required by the Faculty to pass examinations on professional subjects of the earlier years."

PUBLICATIONS

The standing Committee on Publications has presented a report which has been adopted by the Faculty, from which the following extracts are made : —

The Committee has considered at length means which will make possible the issue of the Catalogue at a date not later than January 1. The causes which at present most seriously delay its issue beyond the time necessarily determined by the preparation of the student register are : first, the labor involved in the preparation of the rapidly growing Register of the Alumni; and, second, the late date at which changes affecting Course Schedules which

are to take effect during the school year are submitted to the Faculty for final action. To meet the former of these difficulties, the Committee recommends that hereafter the Register of Alumni be omitted from the Catalogue and issued as a separate publication subsequent to the publication of the Catalogue, and that a statistical summary of the alumni based upon the last published Alumni Register be inserted in the Catalogue in its place. The Committee considers this change to be desirable independent of the above consideration; for the Alumni Register has now grown to such proportions that, condensed in space as it has been this year by the use of smaller type, it is a question of only a few years when its bulk will again become excessive. The Register at present is of such size that, together with other matter relating to the alumni societies, it will make a volume of from 175 to 200 pages.

To meet the second difficulty mentioned above, the Committee makes the following recommendation: that the Programme be issued near the close of the school year, and that it represent as nearly as may be the official announcement of requirements, courses of study, etc., for the following school year.

The Committee further recommends that the matter now appearing under Subjects and Methods of Instruction and in the Subject Schedule be rearranged under the following separate divisions: —

a. *Description of Studies.*

This section shall contain the number and name of each subject appearing in the Course Schedules, together with the name of the instructor, preparation required, and hours per week in which the subject is taken by the several courses. In addition there shall be given a more or less detailed description of each subject and the method of instruction, accompanied by a statement of the text-book or notes used, at the discretion of the instructor in charge. This will involve a rearrangement and combination of the matter now contained in the *Subject Schedule* and under *Subjects and Methods of Instruction*, with considerable new information added.

b. *Laboratories and Equipment.*

This section shall consist of a description (essentially as now given) of the various laboratories and their equipment. This matter now appears in eight different places in the Catalogue.

c. *Libraries.*

This section shall contain a description of the General and Departmental Libraries which are now described in twelve different places in the Catalogue.

The reason for the above recommendations is as follows: —

It seems desirable that a more specific description of the scope of each subject taught should appear in the Catalogue, and that this, together with all other information relative to the subject, should be presented in the simplest and most intelligible manner. This information is particularly important for students who are contemplating entering the Institute with advanced standing. Under the present arrangement it is in many cases difficult or impossible to obtain from the Catalogue any specific statement of the ground covered by the several subjects of study announced in the Course Schedules. The descriptions given under Subjects and Methods of Instruction are so general and undifferentiated that it is in many cases impossible to determine to what particular subject in the Course and Subject Schedule they refer.

It is believed that the arrangement proposed will obviate this difficulty and increase the general usefulness of the Catalogue by giving a clearer idea of the extent and quality of our work.

In a supplementary report it is added : —

The Committee has considered further the issue of the Alumni Register as a publication distinct from the Catalogue, and is still unanimously of the opinion that the time for making this change has come. It being understood, however, first, that the Alumni Register shall still be given a wide circulation; second, that attention be called to the register in the Catalogue, and that a statement be made to the effect that it will be sent free on application; and, third, that the Catalogue contain a summary of graduates by years and courses, and also a general summary showing the nature of the positions held by alumni of the various courses, similar, though less detailed in character, to the summaries now given in the course circulars.

In regard to the Alumni Register itself the Committee recommends that it include, in addition to the present register by classes and the alphabetical register, a geographical register. A call for such a register has already been made by two of the alumni associations, and the Committee believes that it will add considerably to the general usefulness of the publication.

RESEARCH WORK

A special circular has been issued on the Graduate School of Engineering Research, also a circular on Physical Chemistry Research.*

* An extended account of these Research Laboratories is given on page 305.

ENTRANCE PHYSICS

As a result of inquiry among the schools, the Faculty has voted that Physics be made an entrance requirement for students entering in 1905 and thereafter. Physics has been for several years included in the list of entrance electives, and has been rather frequently chosen. It appears that a very large proportion of schools are now able to give more or less adequate instruction, and the requirement is likely to have a beneficial effect both on the preparatory work and on the student working in the Institute. It will not, however, involve the direct anticipation of any specified provision of the Institute course in physics. The definition of the requirement is likely to be, for the present, of a comparatively general character, leaving it possible for schools and candidates to conform to the more specific definition of the Harvard Catalogue, if preferred.

FELLOWSHIPS AND PRIZES

R. Wilfred Balcom, '00, has been awarded an Austin Fellowship for further study of chemistry in Germany. George B. Ford, '00, has been awarded a Savage Fellowship for architectural travel and study in Europe. Samuel C. Lind, '02, has been appointed Dalton Fellow for the study of industrial chemistry in Germany. M. A. Stewart, B.S., a graduate of New Hampshire College, has been appointed Swett Fellow with the expectation that he will become a candidate for the degree of Doctor of Philosophy, his principal study being chemistry.

Horace Gardner Simpson and Austin Dickinson Jenkins, '03, of the Department of Architecture have been awarded graduate scholarships for the coming year. Earle B. Phelps, '99, has been accepted as a candidate for the degree of Doctor of Philosophy, his principal subject to be in biology.

The Rotch prize for excellence of a graduate in architecture has been divided between Miss Jessie G. Gibson and Mr. Austin D. Jenkins: that for a special student has been awarded to Mr. F. H. C. Garber, Jr.

CHANGES IN REQUIREMENTS

Reports have been presented through the committee on Courses of Study in regard to certain important matters, including, among others, the following:—

The record L (passed with low standing) is now interpreted as follows:—

“L (passed with low standing) does not necessarily condition the student, but warns him that his record is unsatisfactory, and that improvement is necessary. He may, however, be required by the Faculty to obtain a better record, by examination, by repeating the work, or otherwise, for admission to dependent work.”

Requirements for admission to second-year professional work are made somewhat stricter than in recent years, but without returning to the old “credit” requirement.

The statements in regard to degrees are considerably modified, and the candidate for Master’s degree is no longer permitted to offer mainly undergraduate work of an allied department.

The new rule in regard to the Doctor’s degree is as follows:

“The degrees, Doctor of Philosophy and Doctor of Engineering, certify to the creditable completion of an advanced course of study in some branch of science or engineering, and to the performance of an original research of high grade bearing upon some scientific or engineering topic. These degrees will be awarded only to candidates who have exhibited the power of dealing with new problems in an independent and efficient manner.

“The course of advanced study and research for either of these degrees must be pursued under the direction and oversight of a committee of the Faculty for at least two school years. The candidate must furnish from time to time such evidence of progress and pass such examinations as the Faculty may require. He must present a thesis embracing the results of his investigation. His attendance must be continuous, except in cases of absence previously approved by the Faculty.

“No assistant or instructor in the Institute, who is devoting the larger part of his time to instruction, shall be accepted as a candidate for any advanced degree.”

GENERAL NOTES

A careful study of certain plans for the work of the Lowell Institute has been made by a Committee of the Faculty.

A conference on the relation of colleges and professional schools was held at the Northwestern University, by invitation of President James, May 8 and 9. The Institute was represented by Professor Tyler, who presented a paper on the "Relation of the Independent School of Technology to General Education."

The question of recommending to the Corporation a system of appointments of members of the Instructing Staff for definite terms of years is under consideration.

A new schedule of the course in geology has been adopted, omitting one of the present options.

A report on the question of maintaining a general course has been presented to the Faculty, and awaits action in the fall.

President Pritchett gave the Commencement address at the University of Virginia on June 15. President Roosevelt was a guest of the university at the same time. It is interesting to remember in this connection that the beloved founder and first president of the Institute, William Barton Rogers, was for some years chairman of the faculty at the University of Virginia.

Dr. William Skarstrom has resigned from the Institute to accept a similar position at Columbia University.

Professor C. Frank Allen has been elected president of the Society for the Promotion of Engineering Education.

THE NEW BUILDING

On June 13 the contracts were signed for the erection of a new laboratory and class-room building, and as planned it will accommodate the departments of naval architecture, mineralogy, and chemical research. It will be known as engineering building C, and will be erected on the lot at the corner of Stanhope Street and Trinity Place, opposite the Trinity Place railroad station.

When the fall term opens it is expected the new building will be ready for occupancy. The plans, as prepared by Rand &

Skinner, architects, call for a structure covering a slightly smaller area than the electrical engineering building constructed last year, but it will be three stories in height instead of one. Last year's building was started about two weeks later than this, and with a time limit fixed at November 1 the Building Committee was able to turn it over to the Institute September 17. The committee hopes that the new building will be ready for students by September 15.

An interesting feature of the work will be that several recent graduates of the Institute will be engaged in the supervision and direction of the mechanics employed. In providing new space for the department of naval architecture, the structure will be indirectly developing the resources of the United States Naval Academy at Annapolis; for the cadets from that institution come to the Institute for their instruction in designing and building warships and other craft required by the government.

SOCIETY OF ARTS

The society held its five hundred and eightieth meeting since the founding of the organization, on April 9. The meeting was addressed by Mr. R. H. Dana, who gave an interesting lecture on the "Charles River Dam," which he illustrated admirably by stereopticon views.

At the forty-first annual meeting of the society, held on May 22, the following officers were elected: president, Henry S. Pritchett; secretary, James F. Norris; executive committee, George W. Blodgett, Edmund H. Hewins, Charles T. Main, James P. Munroe, and A. Lawrence Rotch.

SOCIAL SCIENCE ASSOCIATION

The general meetings of this Association, which this year met in Boston, were held in Huntington Hall, May 14, 15, and 16. A whole day was given to the Economic Section, and half-days each to those of Hygiene, Jurisprudence, and Education. Many valuable and interesting papers were presented.

NATIONAL EDUCATIONAL ASSOCIATION

The early days of July found the Institute buildings in nearly full possession of the National Educational Association, which held its annual meeting in Boston, under the presidency of President Eliot, and with a great manifestation of local interest, from July 6 to 10.

The attendance of teachers and others from all parts of the country reached 36,000. In the Walker Building the two large Physical Laboratories were cleared of portable apparatus and used to their fullest capacity for purposes of registration.

In the Rogers Building the general library was a reception headquarters under the management of the American Institute of Instruction, a New England organization. The scale of arrangements may be inferred from the fact that general sessions were held in the Mechanics' Building, and that section meetings required the use of a large proportion of the churches and school-houses in the vicinity of Copley Square.

President Pritchett, was a member of the Advisory Committee, gave the address of welcome on behalf of the Educational Institutions of Greater Boston, and was one of the speakers at the second general session.

Professor George V. Wendell was chairman of the Committee on Halls, Messrs. Frank H. Rand and James P. Munroe being also members. Other Institute men taking active part in committee work were Dean Burton and Professor Sedgwick. The Executive and Special Committees had their headquarters at the Technology Club.

THE UNDERGRADUATES

GRADUATION WEEK

SENIOR "SMOKER"

On Thursday night, June 4, the Seniors gathered at the Union for a farewell "smoker." In the midst of the festivities it was discovered that the notices of graduation were at the Back Bay Post-office. A rush down Huntington Avenue followed, and the office was besieged. A lonely clerk was charitable enough to distribute the slips; and, in acknowledgment, a box of cigars was presented to the official.

ALUMNI RECEPTION TO GRADUATES

The annual reception of the Alumni Association to the graduating class was held at seven o'clock, Friday, June 5, at Hotel Brunswick. After an informal reception, followed by refreshments, Mr. Walter B. Snow, vice-president of the Association, called the gathering to order and very happily introduced the speakers. Addresses were made by President Pritchett, Mr. F. P. Fish, of the Corporation, Dr. Louis Duncan, of the Faculty, Mr. Linwood O. Towne, '78, representing the class of twenty-five years before, and Mr. George W. Swett, president of the Senior Class.

CONCERT

The Glee, Banjo, and Mandolin Clubs tendered the graduating class a concert Saturday evening, June 6, in Huntington Hall. The selections were much the same as those of the spring concert, and were rendered in such a manner as to receive repeated encores. Mr. Higgins's solo was a favorite, as was also the quartet. The programme, with its embossed cover, was very handsome. The corridor and Huntington Hall were tastefully decorated with palms and orange-trees.

BACCALAUREATE SERVICES

The Baccalaureate sermon was delivered by Rev. Dr. Leighton Parks at Trinity Church, Sunday, June 7, at four o'clock. He took as his text Isaiah vi. 2, 3, and dwelt very ably upon the necessity of reverence, self-control, and love. In the course of his remarks he said: "One of the great values of the system of education which you have had lies in this, that you have not been left to find out for yourselves the relation of culture to utility. You have lived in an atmosphere where the best of all knowledge has been found in its practical application. If the danger of culture is the selfishness of indolence, the danger of Technology is the selfishness of acquisition. To apply the knowledge of the mysteries of life simply for your own well being, or to test the value of your training by the amount of money it will bring you, is to deny your birthright to use the wings of your spiritual nature to fly to the service of man and make known the larger knowledge. The wings most needed in the service of man are imagination and love." . . .

"Believe me, if you use the wings of imagination and love, made strong by knowledge, you can bring to men gifts from the very throne of God. The human soul is athirst to-day for the living God. When the church sings its anthems of praise to him who spake by the prophets and was revealed in perfect beauty in the character of Jesus, do you religious students of nature lift up the antiphone, Holy, holy, holy is the Lord of Hosts: the whole earth is full of his glory! . . . But remember only he is fit to sing the praise of the Eternal who is reverent and self-controlled and willing to serve."

CLASS DAY

The Class Day exercises were held in Huntington Hall on Monday, June 8, at 2.30 P.M. The class president, George Wright Swett, made the opening address, introducing the first marshal, Horace Singer Baker, who, after a cordial welcome to the guests, introduced in turn the Historian, Galen Moses Harris; the Statistician, John Finn Ancona; the Prophet, Renaud Lage; the Orator, Richard Chace Tolman; and the Poet, George Howard Clark.

The class reception and spread on the lawn which followed was interfered with by a much-prayed-for rain; but the refreshments were quickly transferred to the general library in Rogers Building, and the remainder of the afternoon passed very successfully.

FINAL CLASS MEETING

Shortly before the graduation exercises the class held a meeting at which they adopted a new constitution suitable to a graduate organization, and in accordance with this constitution the following officers were elected: president, H. S. Morse; first vice-president, H. S. Baker; second vice-president, J. F. Ancona; secretary and treasurer, C. P. Nibecker; assistant secretary and treasurer, W. H. Adams.

GRADUATION EXERCISES

The graduating exercises were held on Tuesday, June 9, at half-past two in Huntington Hall. The following men read abstracts of theses, chosen, not for superiority of scholarship, but merely because their theses were indicative of the range of investigation carried on by the Seniors: —

- MORTIMER YALE FERRIS Civil Engineering
An Investigation of the Bond of Union between Concrete and Steel for
Concrete-steel Construction. (*With F. W. Davis.*)
- STEPHEN RUSSELL BARTLETT, B.A. Mechanical Engineering
A Twenty-four Hour Duty-test on a Ten Million Gallon Leavitt
Pumping Engine at New Bedford. (*With P. J. Kearny.*)
- RALPH BENJAMIN YERXA Mining Engineering
A Laboratory Study of the Different Stages in the Refining of Copper.
(*With C. F. Green.*)
- AUSTIN DICKINSON JENKINS, B.A. Architecture
A Design for a Marine Observatory.
- WILLIAM CHAILLE MARTIN, M.S. Chemistry
The Cathodic Reduction of Gold Telluride Ores.
- JAMES WINFIELD WELSH, A.B. Electrical Engineering
The Unbalancing of Scott Transformers. (*With C. H. Porter.*)

- ELIZABETH LANGDON WILLIAMS Physics
An Analytical Study of the Fresnel Wave Surface
- DAVID D. MOHLER Chemical Engineering
The Determination of the Temperature-pressure-curve of Sulphurous Anhydride.
- WILLIAM WINSLOW BURNHAM Sanitary Engineering
Tests of the Efficiency of the Municipal Filter of the Biddeford and Saco Water Company.
- GERALD FRANCIS LOUGHLIN Geology
A Study of the Building Stones of Boston and Vicinity.
- HEWITT CROSBY Naval Architecture
An Investigation of the Launching of a Schooner.

After a short though forcible address to the candidates, President Pritchett presented the degrees as follows :—

MASTERS OF SCIENCE

- ISAAC RAYNE ADAMS, S.B. North Cambridge.
A Design for an Establishment for a Horticultural Society. (*With H. E. Bartlett, W. R. Greeley, F. H. Hunter.*)
- HOMER EUGENE BARTLETT, S.B. Boston.
A Design for an Establishment for a Horticultural Society. (*With I. R. Adams, W. R. Greeley, F. H. Hunter.*)
- DONALD MINOR BELCHER, S.B. Winchester.
A Study of the Types of Bacteria Present in Sewage, and their Fate during Storage.
- WILLIAM ROGER GREELEY, S.B. Cambridge.
A Design for an Establishment for a Horticultural Society. (*With I. R. Adams, H. E. Bartlett, F. H. Hunter.*)
- FREDERICK HUSTON HUNTER, S.B. Newburyport.
A Design for an Establishment for a Horticultural Society. (*With I. R. Adams, H. E. Bartlett, W. R. Greeley.*)
- CHARLES WETMORE KELLOGG, Jr., S.B. Brookline.
The Inductance and Resistance of Steel Rails.
- WALTER PURTON ROSS PEMBER, S.B. Needham.
A Design for a Student Settlement for the Institute of Technology.

BACHELORS OF SCIENCE

COURSE I., CIVIL AND TOPOGRAPHICAL ENGINEERING

Horace Singer Baker, Sidney Young Ball, Charles Lynn Bates, John Ross Bates, Charles Whitney Beverstock, Clark Albert Bryan, Robert Avery Cook, Charles Barrows Cox, Harry Clifford Crowell, James Allerton Cushman, Francis Woodward Davis, William Robert Davis, Mortimer Yale Ferris, Frank Demetrius Hayden, John Wardwell Howard, Leroy Littlefield Hunter, Frank Johnson, Richard Mack Lawton, George Casper Doering Lenth, Clyde Webster McCornack, Howard Scott Morse, Charles Patrick Mulherin, Adolf Edwin Place, Sam Graham Porter, John Monroe Smith, George Eber Stratton, George Davis Wilson.

COURSE II., MECHANICAL ENGINEERING

Louis Winfield Adams, Walter Holbrook Adams, Chester Stanley Aldrich, John Flinn Ancona, Ichabod Francis Atwood, Joseph Wheeler Aylsworth, Stephen Russell Bartlett, John Tyrrell Cheney, Frank Gardner Cox, William Henry Donovan, Henry Hammett Fales, Theodore Victor Fowler, Jr., Clarence Morgan Hardenbergh, Galen Moses Harris, Jesse Strassburger Joseph, Philip John Kearny, Bernard Wilson Latham, George MacIntyre MacDonald, Charles Jewell McIntosh, John Andrew McKenna, Silas Clarence Merrick, Ralph Herbert Nutter, Virgil Maro Palmer, Ernest Williams Pelton, Henry Augustus Pemberton, Herbert Emmons Raymond, John Ward Regan, Walter Christian Rott, Edward James Ruxton, Thomas Everett Sears, George Beach Seyms, James Smith Sheafe, George Wright Swett, Edward Cutter Thompson, Duncan Weymss, Irving Williams, George Babcock Wood.

COURSE III., MINING ENGINEERING AND METALLURGY

Roger Derby Babson, Arthur Francis Bennett, Henry Waldeck Buhler, Walter Lorrain Cook, Durward Copeland, Walter Sidney Craven, Walter Maynard Drury, Milton Cornelius Dunham, Edwin Gerrish Goodwin, Carlton Francis Green, Alexander Healy, James

Duane Ireland, Joseph Russell Jones, Francis Donaldson Kehew, Robert Joshua King, Elliot Walker Knight, Harold Bartlett Litchman, Robert Livermore, Harry Raymond Low, Robert Fulton Manahan, Harold Lee Norton, Frank DeGraff Rathbun, Caspar Anthony Schmidt, Frank Arnold Sherman, Lawrence Hosmer Underwood, William Wells Welch, Ralph Benjamin Yerxa.

COURSE IV., ARCHITECTURE

Carl Thompson Bilyea, Andrew Randall Cobb, Jessie Gilbert Gibson, Raymond Mathewson Hood, Robert Fuller Jackson, Austin Dickinson Jenkins, Lewis Rogers Kaufman, Alfred Ernest Lang, Walter Ray McCornack, Zenas Nerses Matteossian, Elmer Francis Ricker, Herman Adolph Scherrer, Horace Gardner Simpson, Edna Dwinel Stoddard, Charles Augustus Whittemore.

COURSE V., CHEMISTRY

Alice Francis Blood, John William Joseph Calnan, Myron Henry Clark, Howard Tyler Graber, Albert Adams Haskell, Clarence Mason Joyce, William Chaille Martin, John Ripley Odell, Daniel Charles Picard, Harrie Bridgman Pulsifer, Charles Frank Sammet, Homer David Strong, William Henry Whitcomb.

COURSE VI., ELECTRICAL ENGINEERING

Frank Zenas Brown, James Hugh Brown, Herbert Clemens Burdick, George Howard Clark, James Arthur Herbert Colgan, Fred Bickford Crosby, John James Dooley, Ralph Waldo Eaton, William Osgood Eddy, Kenneth Windram Endres, Montague Ferry, Adolph Louis Fischer, Dana Hollis Fisher, Samuel Adams Fletcher, Eugene Duncan Forbes, James Madison Gammons, George Holland Garcelon, Charles Francis Gardner, William Mansfield Gilkee, Charles Sewall Glenn, LeRoy Boardman Gould, John Larabee Jones, Roderick James MacGregor, Joseph Archibald Mears, Jr., William Edward Mitchell, Frank Park Montgomery, Herbert Morley Morley, Harry Godfrey Nutter, George Barrows Obear, Harold Osborn, Albert William Pearson, Charles Huntington Porter, Andrey Abraham Potter, Frank Carlton Reed,

Philip Benard Rice, Daniel Arthur Smith, Jr., Floyd Thomas Taylor, James Winfield Welsh, Daniel Scott Wilson.

COURSE VII., BIOLOGY

Clara Eleanor Ham.

COURSE VIII., PHYSICS

Raymond Haskell, Laura Marie Lundin, Lucy Marion Stevenson, Elizabeth Langdon Williams.

COURSE IX., GENERAL STUDIES

Ava Marcella Stoddard.

COURSE X., CHEMICAL ENGINEERING

George Burt Bradshaw, Stanley Alfred Foster, William Lowry Gillett, Stephen Nickerson Mason, Herbert Chandler Merrill, David D. Mohler, Frederic Arthur Olmsted, Joseph Philbrick, Warren Ellis Sumner, Richard Chace Tolman.

COURSE XI., SANITARY ENGINEERING

Sheldon King Baker, William Winslow Burnham, Paul Hansen, Claude Pendleton Nibecker.

COURSE XII., GEOLOGY

Gerald Francis Loughlin.

COURSE XIII., NAVAL ARCHITECTURE

William Johnston Bay, Ernest John Cronenbold, Hewitt Crosby, William Perkins Cross, Henry Fitzler, Justin Edwards Harlow, Paul Gerhard Ludiger Hilken, Renaud Lage, Paul Revere Parker, Oliver Porter Scudder, Howard Chubbuck Turner, Lydia Gould Weld.

Including the Masters of Science, the number of graduates in each course is as follows:—

Course I., Civil and Topographical Engineering, twenty-seven; Course II., Mechanical Engineering, thirty-eight; Course III.,

Mining Engineering and Metallurgy, twenty-eight; Course IV., Architecture, twenty; Course V., Chemistry, thirteen; Course VI., Electrical Engineering, thirty-nine; Course VII., Biology, one; Course VIII., Physics, four; Course IX., General Studies, one; Course X., Chemical Engineering, ten; Course XI., Sanitary Engineering, five; Course XII., Geology, one; Course XIII., Naval Architecture, twelve.

The graduates came from the following places:—

FOREIGN COUNTRIES (6)		Evanston	2
<i>Brazil</i> (1)		Galesburg	2
Rio de Janeiro	1	Highland Park	1
<i>New Brunswick</i> (1)		Kenilworth	1
Springfield	1	Lake Forest	1
<i>Nova Scotia</i> (3)		Peoria	1
Antigonish	1	<i>Indiana</i> (4)	
Greenwich	1	Evansville	1
Truro	1	Indianapolis	3
<i>Turkey</i> (1)		<i>Iowa</i> (1)	
Constantinople	1	Burlington	1
UNITED STATES (193)		<i>Kentucky</i> (1)	
<i>Colorado</i> (1)		Louisville	1
Colorado Springs	1	<i>Louisiana</i> (1)	
<i>Connecticut</i> (6)		Dutchtown	1
Hartford	2	<i>Maine</i> (7)	
Stamford	1	Biddeford	1
Willimantic	2	Brunswick	1
Winsted	1	New Gloucester	1
<i>District of Columbia</i> (4)		North Berwick	1
Washington	4	Portland	2
<i>Georgia</i> (1)		South Lincoln	1
Augusta	1	<i>Maryland</i> (2)	
<i>Illinois</i> (13)		Baltimore	2
Chicago	4	<i>Massachusetts</i> (107)	
DeKalb	1	Arlington	1
		Bedford	1

Billerica	1	Taunton	2
Boston	26	Wakefield	1
Brockton	5	Wayland	1
Brookline	4	Winchester	2
Buckland	1	Winthrop	1
Cambridge	8	<i>Michigan</i> (2)	
Chelsea	4	Detroit	2
Concord	1	<i>Minnesota</i> (1)	
Dedham	1	Minneapolis	1
Essex	1	<i>Missouri</i> (1)	
Everett	1	Salem	1
Falmouth	1	<i>Montana</i> (1)	
Gloucester	1	Kalispell	1
Haverhill	1	<i>New Hampshire</i> (4)	
Holyoke	1	Henniker	1
Hyde Park	1	Keene	1
Lawrence	2	Lebanon	1
Long Plain	1	Woodville	1
Lowell	2	<i>New York</i> (7)	
Ludlow	1	Brooklyn	1
Lynn	3	Buffalo	1
Marblehead	1	New York	2
Medford	2	Poughkeepsie	1
Middleboro	2	Rochester	1
Milton	2	Watertown	1
Needham	1	<i>Ohio</i> (3)	
Newburyport	2	Cleveland	1
Newton	6	Irontown	1
Norwood	1	Springfield	1
Peabody	1	<i>Pennsylvania</i> (10)	
Pondville	1	Allegheny	1
Plymouth	1	Edgewood Park	1
Quincy	2	Glen Mills	1
Rock	1	Grove City	1
Salem	1	Irvona	1
Somerville	3	New Brighton	1
South Framingham	1	Pittsburg	1
Spencer	1	Scranton	3
Springfield	1		

<i>Rhode Island</i> (8)		<i>Texas</i> (2)	
Newport	2	Austin	1
Pawtucket	1	Kyle	1
Providence	2	<i>Virginia</i> (1)	
Tiverton	1	Richmond	1
Westerly	1	<i>Washington</i> (1)	
Woodstock	1	Seattle	1
<i>South Carolina</i> (1)		<i>Wisconsin</i> (1)	
Columbia	1	Racine	1
<i>Tennessee</i> (1)		<i>Wyoming</i> (1)	
Clarksville	1	Buffalo	1

Of the one hundred and ninety-two Bachelors of Science, no less than twenty-four were already graduates of other institutions, three having received degrees from Yale, two from Harvard, and one from each of the following colleges or universities: Acadia, Amherst, Baylor, Beloit, Brown, Gallaudet, Grove City, Illinois, Neuchâtel, North-western, Robert, Rochester, St. Francis Xavier, St. Joseph's, University of the South, South-western Presbyterian, Texas Agricultural and Mechanical, Tufts, and University of Washington.

PRESIDENT'S RECEPTION

The President's reception to members of the Corporation, the Faculty, the alumni, the graduating class, and to other friends of the Institute, was held in the general library after the graduation exercises.

TECH NIGHT AT THE "POPS"

Although the President's reception was, officially, the final event of graduation, "Tech Night" at the Pop Concerts at Symphony Hall has become too closely associated with Commencement to be passed over without mention. The alumni and undergraduates were present in large numbers, and they made the hall ring with the various class yells. Indeed, there was too much enthusiasm to suit the leader of the orchestra, Adamowski. With

the exception of the class which had graduated that afternoon the class of 1902 had the largest representation among the alumni. The class of 1893, which was holding a reunion in Boston that day, also showed up in good number. President Pritchett received his usual hearty welcome.

THE TECH SHOW

"A Scientific King," Tech's fifth annual show, was presented at the Hollis Street Theatre, April 28 and May 1, with the greatest success, and was pronounced the best amateur production given in Boston this season. The house was crowded from top to bottom with an appreciative audience. The boxes were filled with distinguished guests. Governor and Mrs. Bates occupied a box in the second tier, while in a lower box President and Mrs. Pritchett entertained friends. Mrs. William B. Rogers, widow of the founder of the Institute, was also present in a box.

The music this year was especially tuneful and catchy. Some of the ensemble numbers compared favorably with many of the comic operas on the professional stage. The opening chorus, "Oh! oh! for this merry life," the co-eds' song, the Janitor's Chorus, the "Tale of the Electric Bell," a topical song, "Petition the Faculty," and the drinking song, "Here's a health to thee," were most worthy of mention.

The composers of the music are W. J. Bay, '03; F. S. Farrell, '04; G. F. Loughlin, '03; and L. J. Whipple, '04. The libretto, which had a good backbone of a probable story, was by G. F. Loughlin.

The acting throughout was spirited and of excellent finish, and reflected great credit on the work of the show's coach, Mrs. Janet Edmondson Walker. The play was full of pleasantries and local hits, which made it especially enjoyable to Tech men.

One of the most interesting features of the performance was the band of co-eds. Dressed in beautiful costumes of striking colors, they displayed their girlish charms most attractively. U. J. Nicholas, '06, as Polly Con, the leader of this giddy band, was one

of the favorites of the afternoon. He sang the two or three songs that fell to his share in a most pleasing manner.

Roswell Davis, '05, as secretary to the king, was also a great favorite with the audience. His song, "Petition the Faculty," was the hit of the play, as it was decidedly clever in its way.

Joseph Daniels, '05, gave an amusing presentation of the title rôle. The solos by F. L. Higgins, '03, as Prince Phyllite, were beautifully rendered. Robert S. King, '03, was a most bewitching Princess Beryl. The part of the Princess Marguerite was cleverly taken by T. W. Estabrook, '05. J. P. Barnes, '05, as the Robber Chief was well applauded for his fine bass singing in solos, and when he led the Robbers' and Janitors' Choruses. G. Crosby, '05, who took off Tech's literary star, Professor Arlo Bates, had some amusing scenes. The king's two pages, one 6 feet, 4 inches, and the other only 4 feet, 6 inches in height, the first thin and the second fat, created great fun by communicating to each other by the aid of a whistle. The part of Pedro, the innkeeper, was very effectively taken by F. M. Blount, '04. His solo at the end of the opening chorus was well liked and applauded.

The ballets have always been a notable feature of Tech shows, and this year they far excelled anything formerly presented in that line, all of them being beautifully staged and executed. The gypsy dance was the first of these, followed by the Oriental Waltz. Walter M. Butts, '05, the solo dancer in the latter, rendered his dance with such skill and grace that he was encored repeatedly. The flower ballet, which opened up the second act, was most beautifully put on, as was also the butterfly ballet. Charles O. Egerton, '04, was the solo dancer in these ballets. His dance in the first act as Mercury, patron saint of the thieves, was most original and lasting in impression. Dressed in white to the accompaniment of a thunder-storm, with brilliant flashes of lightning, he danced in most artistic and effective manner.

The cast was as follows : —

THE CAST

King Albite (a would-be scientific king, ruler of the Island of Metasilicatia),		JOSEPH DANIELS, '05
Prince Phyllite (his son)	FREDERICK LYLE HIGGINS, '03	
Willemite (his secretary)	ROSWELL DAVIS, '05	
Princess Beryl (his neice)	ROBERT JOSHUA KING, '03	
Princess Margarite (Phyllite's betrothed),		THOMAS WINTHROP ESTABROOK, '05
Topaz (Robber Chief)	JAMES PHILLIPS BARNES, '05	
Psilomolane	his { ARTHUR HOOPER LANGLEY, '04	
Lepidomelane	Lieutenants { WILLIAM JAMES SNEERING, '05	
Pedro (an innkeeper)	FERNANDO MORENO BLOUNT, '04	
Arlo Simpkins (a poet)	EDWARD MAY COFFIN, '05	
Jasper (a bell-boy)	HARRY WALKER DONALD, '05	
Poker Jim	Robbers {	CHARLES HORACE CLAPP, '05
Crappy Dan		HERBERT ARTHUR TERRELL, '06
Ragtime Bill		HARRY VARNUM FLETCHER, '06
Wiley Willie HENRY KRAMER, '04
Foxy Roxey JOHN EDGAR SIMMONS, '06
Sammy Sly		CHARLES STILLMAN SPERRY, '05
Georgie the Kid		JAMES HAMPTON ROGERS, '04
Willie Bounce NUGENT FALLON, '06
Polly Con (an enterprising co-ed)		W. JAMES NICHOLAS, '06
Anna Litt	Co-eds {	. . . JOSEPH S. WEIL, '06
Algy Bray WILFRED N. OLIVER, '06
Cassie Role ALFRED CLARK FERRY, '04
Dina Maux LOUIS J. KILLION, '05
Mattie Mattics		HENRY DELANO LORING, '06
Addie Shun		GEORGE CARLYLE THOMAS, '05
Minna Rall		HAROLD STANIELS GRAHAM, '06
Meta Morfix		EDWIN FERDINAND BENDER, '05
Miss Deal (chaperon to co-ed)		GORHAM CROSBY, '05

The play was produced this year under the following management : —

Merton Leslie Emerson, '04, general manager; Reginald Andrew Wentworth, '04, business manager; Scott Clark Runnels, '05, assistant business manager; William Walter Cronin, '04, stage manager; George Carlyle

Thomas, '05, assistant stage manager ; Attwood Eugene Rippey, '05, press representative.

CHORUS

Maids of Honor.—William James Cady, '06 ; Edward Benjamin Rich, '04 ; Waldron Gustine Lawrence, '06 ; Samuel Shapira, '05.

Court Ladies.—Sidney Taylor Carr, '06 ; Herbert James Mann, '06 ; Joseph Hall Feemster, '06 ; Louis Ernest Robbe, '05 ; Pierre Richard Leonard Hogner, '06 ; William Tufts, '05 ; Milton Lichtenstein, '06 ; Bernard Foster Whittaker, '06.

Courtiers.—Arthur Field Belding, '05 ; James Edward Griffin, '06 ; Frederick Gardner Bennett, '05 ; George Mitchell Henderson, '06 ; Robert Sidney Clark, '06 ; Daniel Tustin Loomis, '06 ; Harry Hall Cook, '06 ; Howard Payne Shaw, '06 ; Henry Everett Darling, '06 ; Arthur Gaylord Slocum, Jr., '04 ; William Green, '05 ; Bertram Austin Thompson, '06.

BALLETS

Gypsy Dance.—Chester Allen, '05 ; Henry Michael Flinn, '05 ; John Churchill Damon, '05 ; Ernest Maxwell Smith, '06 ; Henry Douglas Eaton, '06 ; Percy Ethan Tillson, '06 ; Carleton Murray Emerson, '06 ; Franklin James Van Hook, '06.

Oriental Waltz.—Solo dancer, Walter Matthews Butts, '05 ; Francis Edward Drake, '05 ; George Bayard Jones, '05 ; Alden Glover Drew, '04 ; Robert Morris Phinney, '04 ; Charles Whitney Hawkes, '05 ; Waldso Turner, '05.

Thieves' Dance.—Mercury, solo dancer, Charles O. Egerton, '04 ; Roderick D'Hu, Earl George Christy, '06 ; Captain Kidd, Walter Philip Regestein, '03 ; Robin Hood, Edward Farnum Rockwood, '04 ; Dick Turpin, Albert Edwin Sweetser, '05.

Flower.—Solo dancer, Charles O. Egerton, '04. Poppies : Chester Allen, '05 ; John Churchill Damon, '05 ; Henry Douglas Eaton, '06 ; Carleton Murray Emerson, '06 ; Henry Michael Flinn, '05 ; Ernest Maxwell Smith, '06 ; Percy Ethan Tillson, '06 ; Franklin James Van Hook, '06. Sunflowers : Francis George Baldwin, '06 ; Walter Dodge Davol, '06 ; Percy Richmond Finer, '04 ; Ralph Staples Gifford, '05 ; John Edward Lynch, '05 ; Horace James Macintire, '05 ; Harvey Baxter Orcutt, '06 ; Edward Oscar Welch, '05.

Butterfly.—Solo dancer, Walter Mathews Butts, '05 ; Francis George Baldwin, '06 ; John Edward Lynch, '05 ; Walter Dodge Davol, '06 ;

Horace James Macintire, '05 ; Percy Richmond Finer, '04 ; Harvey Baxter Orcutt, '06 ; Ralph Staples Gifford, '05 ; Edward Oscar Welch, '05.

The patrons and patronesses were: Mr. Charles Follen Adams, Mrs. Thomas Allen, Mrs. Oliver Ames, Sr., Governor and Mrs. John L. Bates, Professor Arlo Bates, Mr. and Mrs. Samuel Cabot, Professor and Mrs. F. W. Chandler, Dr. and Mrs. D. W. Cheever, Mrs. Alexander Cochran, Mr. and Mrs. C. P. Curtis, Mrs. Hasket Derby, Professor and Mrs. Désiré Despradelle, Mrs. E. Winchester Donald, Mrs. Frederick P. Fish, Mr. and Mrs. Arthur Foote, Mrs. Hollis French, Mr. Alfred Hemenway, Mrs. F. L. Higginson, Mrs. H. L. Higginson, Mrs. Julia Ward Howe, Mr. and Mrs. W. B. Kehew, Mrs. B. J. Lang, Professor and Mrs. Gaetano Lanza, Mrs. A. Lawrence Lowell, Mrs. Guy Lowell, Mrs. George H. Lyman, Dr. and Mrs. S. J. Mixter, Mrs. G. H. Monks, Mrs. Everett Morss, Mrs. Louise Chandler Moulton, Mrs. Guy Norman, Professor and Mrs. Dwight Porter, Mrs. Henry S. Pritchett, Mrs. Henry M. Rogers, Mrs. William B. Rogers, Mr. and Mrs. A. Lawrence Rotch, Mrs. Charles S. Sargent, Mr. and Mrs. J. Montgomery Sears, Professor and Mrs. William T. Sedgwick, Dr. and Mrs. John P. Sutherland, Professor George F. Swain, Professor and Mrs. Henry P. Talbot, Mrs. Eugene V. R. Thayer, Mrs. William Tudor, Mrs. Lucius Tuttle, Mr. and Mrs. F. P. Vinton, Mrs. Francis A. Walker, Mrs. W. F. Whitney, Mrs. George Wigglesworth, Mrs. Moses Williams.

A. E. RIPPEY, '05.

THE PRIZE COMPETITION OFFERED BY THE BOSTON SOCIETY OF ARCHITECTS

The Boston Society of Architects instituted some years ago an Annual Competition, providing two prizes of fifty dollars each in books, to be awarded respectively to the regular student and to the special student of the fourth-year class in Architecture who should present the best solution for a problem in design, to be proposed by the society. The programme for the problem of the school year just concluded was an especially interesting and practical one, and was responded to by the students with much enthusiasm. The drawing required was an inch scale detail elevation and section of the doorway to the City Club House which had constituted the preceding problem in the regular fourth-year curriculum. The time allowed for the study and presentation of the problem was

three weeks. An extension of two days was afterward granted, in order to permit the students to render the drawings carefully and accurately.

There were twenty-three drawings submitted in all, of which twelve were by special students. The competitors were:—

Regular Students.—A. R. Cobb, A.B., Miss J. G. Gibson, R. M. Hood, R. F. Jackson, A. D. Jenkins, A. E. Lang, Z. N. Matteossian, W. R. McCornack, E. F. Ricker, H. A. Scherrer, H. G. Simpson.

Special Students.—W. Chamberlain, F. C. Hirons, E. E. Hoxie, L. R. Kaufman, I. P. Lord, L. Luquer, A.B., E. W. Mason, Jr., Ph.B., W. A. Paine, F. L. W. Richardson, A.B., A. J. Scholtes, O. S. Swenson, G. A. Truelson.

The drawings, when completed, were exhibited in the special hall of the department for several days, during which time they were viewed by a jury from the Boston Society of Architects made up of Messrs. Alexander S. Jenney, Robert S. Peabody, Charles Howard Walker, A. W. Longfellow, Jr., and Henry J. Carlson.

The decision was to be announced at a dinner given by the society to the officers of the Department of Architecture and the fourth-year students. The dinner was served in the Senior drawing-room. Robert S. Peabody, the president of the society, presided, and introduced the many speakers of the evening. Among these were Francis W. Chandler, in charge of the Department of Architecture, Désiré Despradelle, Rotch Professor of Architectural Designs, Edwin J. Lewis, secretary of the society, and a number of former winners of prize, including Mr. Phillips, the first graduate to achieve that distinction, Mr. Andrews, of Andrews, Jaques & Rantoul, Mr. Bacon, and others.

Mr. Jenney then announced, on behalf of the jury, that the prize for the regular students had been awarded to A. D. Jenkins, with honorable mentions for Z. N. Matteossian and R. M. Hood, and that the other prizes had been awarded to F. C. Hirons, mention being given to F. L. W. Richardson.

Before the meeting adjourned, the guests were invited to review the drawings in the exhibition-room, while Mr. C. Howard Walker

gave a résumé of the character of each. He spoke briefly of the general character of the work, that it was eminently satisfactory, and showed hard work and good appreciation of the principles of design, that the jury were pleased at the enthusiasm which the students had put into their study, and that the designs were, without exception, good. Mr. Walker then dwelt more in detail upon the two solutions which had been selected as best embodying the spirit and requirements of the problem, pointing out not only their strong points, but their defects.

The result of the whole competition this year was gratifying to the society and the department, and encouraging to the students. It proved so generally successful that there is promise of many interesting and profitable contests of like nature in the future.

W. R. G.

ATHLETICS

SPRING ATHLETIC CARNIVAL

The events were one-mile run, two-mile run, quarter-mile run, shot-put, pole vault, and high jump,—the last three being handicap events.

On Thursday, April 9, the mile was run over a measured course extending up Newbury Street from the start, between Dartmouth and Exeter Streets, to Massachusetts Avenue, along Massachusetts Avenue to Boylston Street, and down Boylston Street, finishing at the corner of Exeter Street. There were fifteen starters, the first three finishing in the following order: E. F. Jenkins, '04; E. L. Ovington, '04; F. B. Riley, '05. Time, 4 m. 47 1-5 s.

On Friday the quarter-mile was run on a measured course on Newbury Street, starting at Fairfield and finishing at Dartmouth Street. Sixteen men entered.

Le B. Turner, '05, was first; R. S. Franklin, '03, second; and R. P. Nichols, '05, third. The time, 52 s., was extremely good, and within 4-5 of a second of the Tech record.

On Saturday the high-jump, shot-put, pole-vault, and two-mile run were run off on the new field in front of Technology Cham-

bers. Seven men entered the high jump. Four fell out at 5 ft. 2 ½ in., leaving Farrington, '05, Curtis, '04, and O. R. Adams, '06, to fight for places. Farrington won, with an actual jump of 5 ft. 7 ½ in., and a handicap of 1 ½ in.; Curtis, second, with an actual jump of 5 ft. 6 ½ in., handicap, 1 in.; Adams, third, actual jump, 5 ft. 2 ½ in., handicap, 2 in.

There were four entries in the pole vault: Curtis, '04, scratch, won with a vault of 10 ft. 6 in.; Mackie, '05, second, actual vault, 10 ft., handicap, 3 in.; Ovington, '04, third, actual vault, 9 ft., handicap, 6 in.

The shot-put was a contest of Morrill against the field, he being scratch, while all the others had a handicap. The shot-put winners: Morrill, '05, scratch, actual distance, 38 ft. 1 in.; Lindsly, '05, 3 ft., gross, 37 ft. 2 ½ in.; Lang, '04, 3 ft., gross, 35 ft. 6 in.

The two-mile run was the feature of the day. Six men entered. One fell out on the fourth or fifth lap, a second on the eleventh lap, and a third on the eighteenth, leaving but three men to finish. Lorenz, '05, took the lead for most of the first half, Riley, '05, then set the pace for the next mile; when he gave way to Thurber, '06. Both held together and opened up a gap of 50 yards from the remaining two, Lorenz and Ovington. At the eighteenth lap, Lorenz started a splendid spurt, and closed over half the gap between him and the leaders. Riley responded in the last hundred yards, and easily spurted past Thurber, finishing strong in the fast time of 10 m. 34 4-5 s. This clipped just 10 seconds from the previous Tech record, made by D. M. Pray, '99. Thurber and Lorenz were second and third, respectively.

A summary of the events with regard to the various classes is given below:—

<i>Event</i>	<i>Summary</i>			
	'03	'04	'05	'06
1-mile run	0	8	1	0
¼-mile run	3	0	6	0
2-mile run	0	0	6	3
Running high jump	0	3	5	1
Pole vault	0	6	3	0
Putting-shot (16 lbs.)	0	1	8	0
Totals	3	18	29	4

ANNUAL SPRING MEET

The annual spring meet took place April 24 and 25. The events were as follows:—

HIGH JUMP.—The entries were: Curtis, '04; Emerson, '04; Ovington, '04; Farrington, '05; Mackie, '05; Adams, '06. The winners were: Farrington, first; Curtis, second; Emerson, third. Height, 5 ft. 7½ in.

SHOT-PUT.—Entries: Hoy, '04; Homer, '04; J. C. Baker, '04; Lindsly, '05; Morrill, '05. Winners: Morrill, first; Baker, second; Lindsly, third. Distance, 38 ft. 3 in.

BROAD JUMP.—Entries: Franklin, '03; Hoy, '04; Kellar, '04; Read, '04; Lang, '04; Marsh, '05; Abbott, '05; Northrup, '06; Adams, '06; Sanford, '06. Winners: Lang, first; Franklin, second; Northrup, third. Distance, 20 ft. 9 in.

POLE VAULT.—Entries: Curtis, '04; Ovington, '04; Phillips, '04; Mackie, '05. Winners: Curtis, first; Phillips, second; Mackie, third. Height, 10 ft. 6 in.

HAMMER THROW.—Entries: Gouinlock, '05; Lindsly, '05; Knapp, '06. Winners: Lindsly, first; Knapp, second; Gouinlock, third. Distance, 111 ft. 9 in. Former Tech record, 107 ft. 10½ in.

DISCUS THROW.—Entries: Lang, '04; Lord, '05; Morrill, '05; Gouinlock, '05; Russell, '05; Northrup, '06. Winners: Morrill, first; Lang, second; Gouinlock, third. Distance, 110 ft. 2½ in. Former Tech record, 108 ft. 4 in.

2-MILE RUN.—Entries: E. T. Jenkins, '04; F. B. Riley, '05; J. V. Barnd, '05; E. R. Adams, '05; E. H. Lorenz, '05; G. A. Casey, '05; T. B. Thurber, '06. Winners: Riley, first; Lorenz, second; Thurber, third. Time, 10 m. 36 3-5 s.

440-YARD DASH.—Entries: L. B. Turner, '05; E. T. Steele, '05; M. A. Coe, '06; H. L. Marsh, '06; Stoddard, '06. Winners: Turner, first; Coe, second; Steele, third. Time, 54 s.

2-MILE BICYCLE.—Entries: P. M. Smith, '04; Evans, '04; Tsuruta, '05; Mante, '05; Eastham, '05; H. L. Dean, '05. Winners: Tsuruta, first; Eastham, second; Dean, third. Time, 5 m. 13 s.

100-YARD DASH.—Entries: J. F. Ancona, '03; R. S. Franklin, '03; W. B. Boggs, '04; C. Lang, '04; H. S. Kendall, '04; C. R. Haynes, '04; E. B. Snow, '05; E. T. Steele, '05; T. P. Moorehead, '05; L. B. Turner, '05; J. W. Williams, '06; A. W. Geist, '06. Following ran in final heat: Williams, Boggs, Snow, Franklin, Haynes, and Turner. Winners: Williams, first; Turner, second; Franklin, third. Time, 10 2-5 s. Tech record.

1-MILE RUN.—Entries: E. T. Jenkins, '04; Marcy, '05; Buckingham, '05. Winners: Jenkins, first; Marcy, second; Buckingham, third. Time, 4 m. 44 2-5 s.

120-YARD HIGH HURDLES.—Entries: Curtis, '04; Ovington, '04; R. D. Emerson, '05; Farrington, '05. Winners: Ovington, first; Emerson, second; Farrington, third. Time, 17 s.

880-YARD RUN.—Entries: Kendall, '04; Gerry, '05; R. P. Nichols, '05; J. Blatz, '06; E. L. Wilson, '06; N. A. White, '06; H. L. Marsh, '06. Winners: Nichols, first; Wilson, second; Marsh, third. Time, 2 m. 9 s.

220-YARD DASH.—Entries: Ancona, '03; Franklin, '03; Haynes, '04; Dickerman, '05; Moorehead, '05; Steele, '05; Turner, '05; Judkins, '06; Guest, '06; Coe, '06; Williams, '06. The following ran in final heat: Steele, Turner, Franklin, Coe, Williams, Ancona. Winners: Turner, first; Franklin, second; Williams, third. Time, 22 3-5 s. Former Tech record, 23 s.

220-YARD LOW HURDLES.—Entries: Hayes, '04; Ovington, '04; Curtis, '04; Farrington, '05; Emerson, '05; Santry, '06. Winners: Ovington, first; Emerson, second; Haynes, third. Time, 26 4-5 s.

Summary of Points by Classes

	1903	1904	1905	1906
100-yard dash	1	0	3	5
220-yard dash	3	0	5	1
440-yard dash	0	0	6	3
880-yard run	0	0	5	4
1-mile run	0	5	4	0
2-mile run	0	0	8	1
120-yard high hurdles	0	5	4	0
220-yard low hurdles	0	6	3	0

	1903	1904	1905	1906
Running high jump	0	2	7	0
16-pound shot-put	0	3	6	0
Running broad jump	3	5	0	1
Pole vault	0	8	1	0
Hammer throw	0	0	6	3
Discus throw	0	3	6	0
2-mile bicycle race	0	0	9	0
Totals	7	37	73	18

THE DUAL MEET WITH DARTMOUTH, MAY 8

The meet was one of the most important in recent years, and the score was 94 to 71.

The summary:—

100-YARD DASH.—S. L. Swasey, Dartmouth, first; R. S. Franklin, M. I. T., second; C. Lang, M. I. T., third; S. W. Warner, Dartmouth, fourth. Time, 10 2-5 s.

1-MILE RUN.—C. A. Campbell, Dartmouth, first; W. F. Jenkins, M. I. T., second; S. H. Buckingham, M. I. T., third; H. Johnson, Dartmouth, fourth. Time, 4 m. 46 1-5 s.

120-YARD HURDLES.—E. L. Ovington, M. I. T., first; R. D. Emerson, M. I. T., second; C. R. Haynes, M. I. T., third; R. W. Neal, Dartmouth, fourth. Time, 16 2-5 s. New Tech record.

440-YARD DASH.—S. L. Swasey, Dartmouth, first; Le B. Turner, M. I. T., second; M. A. Coe, M. I. T., third; S. P. Warner, Dartmouth, fourth. Time, 50 3-5 s.

880-YARD RUN.—H. D. Thrall, Dartmouth, first; E. L. Wilson, M. I. T., second; R. P. Nichols, M. I. T., third; R. E. Lewers, Dartmouth, fourth. Time, 2 m. 3 2-5 s.

220-YARD DASH.—R. S. Franklin, M. I. T., first; H. L. Williams, M. I. T., second; S. P. Warner, Dartmouth, third; D. L. Jackson, Dartmouth, fourth. Time, 23 1-5 s.

2-MILE BICYCLE.—B. C. Eastham, M. I. T., first; W. H. Watson, Dartmouth, second; P. G. Favor, Dartmouth, third; E. Brennan, Dartmouth, fourth. Time, 6 m. 17 s.

RUNNING HIGH JUMP.—G. A. Curtis and R. D. Farrington, M. I. T., tied for first; M. W. Bullock and J. E. Griffin, both of Dartmouth, tied for third. Height, 5 ft. 6½ in.

SHOT-PUT.—V. M. Place, Dartmouth, first; L. G. Morrill, M. I. T., second; D. C. Colesworthy, Dartmouth, third; A. H. Jeffries, Dartmouth, fourth. Distance, 39 ft. 5¼ in.

THROWING 16-POUND HAMMER.—B. E. Lindsly, M. I. T., first; V. M. Place, Dartmouth, second; W. J. Knapp, M. I. T., third; J. W. Gage, Dartmouth, fourth. Distance, 118 ft. New Tech record.

POLE VAULT.—G. A. Curtis, M. I. T., first; F. B. Hansen, Dartmouth, second; R. D. Farrington and M. Mackie, M. I. T., tied for third. Height, 10 ft. 6½ in. New Tech record.

RUNNING BROAD JUMP.—C. Lang, M. I. T., first; R. S. Franklin, M. I. T., second; H. W. Bullock, Dartmouth, third; H. M. Hobart, Dartmouth, fourth. Distance, 21 ft. 2 in.

THROWING DISCUS.—L. G. Morrill, M. I. T., first; V. M. Place, Dartmouth, second; A. H. Jeffries, Dartmouth, third; C. Lang, M. I. T., fourth. Distance, 105 ft. 7 in.

TWO-MILE RUN.—C. A. Campbell, Dartmouth, first; F. B. Riley, M. I. T., second; E. F. Jenkins, M. I. T., third; G. A. Casey, M. I. T., fourth. Time, 10 m. 21 1-5 s.

220-YARD HURDLES.—J. H. Neulle, Dartmouth, first; E. L. Ovington, M. I. T., second; C. R. Haynes, M. I. T., third; W. P. Emery, Dartmouth, fourth. Time, 26 1-5 s.

THE WORCESTER MEET, MAY 22, 23

Tech missed second place by just two points.

The following is the list of point winners for M. I. T.:—

E. F. Jenkins, first in mile run	5
F. B. Riley, first in 2-mile run	5
E. L. Ovington, second in high hurdles, third in low hurdles	5
R. S. Franklin, third in 220 and 100 yard	4
K. Tsuruta, second in bicycle	3
C. R. Haynes, third in high hurdles	2

B. E. Lindsly, third in hammer throw	2
G. A. Curtis, tie for second in pole vault	2
H. L. Williams, fourth in 220-yard dash	1
L. G. Morrill, fourth in discus throw	1

 30

<i>Events</i>	<i>Amherst, 51</i>	<i>Williams, 31</i>	<i>M. I. T., 30</i>	<i>Dartmouth, 15</i>	<i>Bowdoin, 13</i>	<i>Wesleyan, 13</i>	<i>Brown, 7</i>	<i>Trinity, 3</i>	<i>U. of Vermont, 2</i>
2-mile bicycle	—	—	3	—	—	5	2	1	
1-mile run	—	3	5	3					
440-yard run	6	2	—	—	—	3			
Putting 16-lb. shot	7	—	—	1	3				
Running high jump	4	6	—	1					
100-yard dash	5	—	2	3	1				
120-yard hurdle	—	6	5						
880-yard run	5	3	—	1	—	—	—	—	2
Throwing discus	3	—	1	2	—	—	5		
Throwing 16-lb. hammer	3	—	2	—	6				
220-yard dash	5	—	3	3					
220-yard hurdle	5	—	2	1	3				
Running broad jump	8	1	—	—	—	—	—	2	
Pole vault	—	7	2	—	—	2			
2-mile run	—	3	5	—	—	3			
Totals	51	31	30	15	13	13	7	3	2

ANNUAL MEETING M. I. T. A. A.

The annual meeting of the M. I. T. Athletic Association for election of officers was held Wednesday, May 27. R. P. Nichols was elected vice-president; W. W. Cronin, '04, was re-elected secretary. The treasurer is Le B. Turner. R. D. Emerson was elected representative to advisory council.

A committee was appointed to consider the advisability of abolishing dues for the coming year. It is desired to extend the mem-

bership considerably, and this would be a step in that direction. A vote of thanks was extended to the retiring officers.

TENNIS ASSOCIATION

Officers of the Tennis Association for next year are as follows : president, A. H. Langley, '04 ; vice-president, R. Hazeltine, '04 ; secretary-treasurer, Niles, '04. The delegate to the N. E. I. T. A. is R. Hazeltine.

Intercollegiate Tennis.—The annual tournament of the New England Intercollegiate took place May 25 and 26. Tech's representatives were J. R. Jones and A. H. Langley.

GOLF ASSOCIATION

At a meeting held the last of May in Boston, a New England Intercollegiate Golf Association was formed, with Brown, Williams, Amherst, Bowdoin, and M. I. T. as charter members. The following officers were elected : president, M. A. Jones, Williams ; vice-president, C. D. Mercer, Brown ; secretary-treasurer, W. A. Lunt, Bowdoin. The three officers of the association, together with S. F. Jones, of Amherst, and R. B. Williams, of M. I. T., are to form an executive committee.

It was decided to hold an annual tournament about the middle of October, at which both the team and individual championships will be decided. The conditions of play are to be eighteen holes, match play, for all rounds, with the exception of the final, which is to consist of thirty-six holes.

Although the course upon which the tournament will be held is not decided, it is hoped that the first tournament will take place in Providence.

NEW CLASS CHAMPIONSHIP CUP

The cup is sterling silver, standing about thirteen inches high, and, when finished, will have engraved upon two panels nine wreaths, each to receive the class numerals, and upon the third panel a shield with the story of the cup. Each year the class who

wins the most points in the three scratch meets will have its numerals engraved within one of the wreaths. The cup will therefore do service for eighteen years.

INTERSCHOLASTIC DRILL

The cup put up by the Freshman Battalion for State High School companies was competed for May 8 by thirty men from most of the important high schools outside of Boston. H. M. Southworth, of Wakefield, won the first prize, and the other Wakefield man, R. T. Emerson, got fifth place. E. J. Hall, of Medford, received second, and H. W. Hurwitz and D. Bradley, of Gloucester, were third and fourth respectively.

Between the squads and after the competitive drill the Freshman Battalion gave an exhibition drill. The prizes were then awarded to the contestants. The judges were Captain F. F. Cutting, Fifth Regiment, M. V. M.; Captain J. H. Smyth, First Heavy Artillery, M. V. M.; Lieutenant N. P. Cormack, First Heavy Artillery, M. V. M.

The marksmanship medals for the season were distributed to winners. Colonel Elliott, Captains Barry and Foster, and Private Webster received first-class, while Captain Keleher, Lieutenant Tucker, and Corporal Hurt got second. Corporal Nash would have received a prize, had he been in the competition, for he had the best scores.

CLASS DINNERS

FRESHMAN DINNER

The Freshman Dinner, which was dated for April 27, was held the 25th, in order to outwit the Sophomores who intended to capture the toastmaster. Owing, probably, to this change in date, only seventy-eight men attended. The toastmaster, U. J. Nicholas, spoke of the feeling of admiration in foreign countries, especially Australia, towards Tech. C. F. W. Wetterer reviewed the class history as far as already existing. J. W. Williams, Jr., talked on

Athletics, and W. H. Foster on Drill. "The Future of 1906" was the topic of E. M. Smith. The visiting members of the Faculty were then invited to speak. The Dean pointed out the undesirability at Tech of the "rough house" and class fights, so overdone in smaller colleges. President Pritchett, in his address, said he considered it an excellent idea for each class to institute some particular custom for later classes to follow. Professor Talbot gave interesting reminiscences of Tech, and Mr. Blachstein complimented the class on being ambitious for high ideals, as evidenced by their placing their flag as high as possible. With songs and cheers the dinner then came to an end.

SOPHOMORE CLASS DINNER

April 24 one hundred and five Sophomores gathered at the Union for their annual dinner.

At the close of the dinner President R. N. Turner introduced Waldso Turner, the toastmaster. Mr. Turner then introduced the first speaker, President Pritchett, who told of a trip to William and Mary College with President Eliot, getting in some knocks at Harvard, which put the boys in the happiest frame of mind. This story was followed by a few words in which he told of the plans for moving the Institute, speaking of the progress in the General Court of the bill to grant us the land on Boylston Street in fee simple. He also referred to the suits against the Institute which had developed from the rush for the '06 flag.

E. T. Steele responded to the toast "Athletics," referring to the excellent record already established by the class, and then the Dean was heard from. He told some incidents and anecdotes of alumni and students, and told the men that he was always trying to keep in touch with the students and their interests. *Technique '05* was responded to by R. O. Marsh. Professor Clifford, Mr. Sneeringer, Mr. Rand, Bursar of the Institute, Captain Baird, Mr. Barnes, and Mr. W. Green also spoke.

GRADUATE STUDENT DINNER

At the Tech Union, on May 16, the graduate students of the Institute came together for the first time socially, with Dr. Pritchett as their host, and the heads of the various departments as guests of honor. The dinner was an informal one, and was followed by short addresses.

CLUBS AND SOCIETIES

Architectural Society.—The April smoke-talk of the Architectural Society was held April 16 at the Union, about thirty being present. Mr. T. H. Skinner, a graduate and former instructor of the Institute, gave in a most interesting manner a short history of the University of Virginia, and a description of the recent rebuilding and enlarging done there.

The annual dinner of the Architectural Society was held on May 7 at Fellner's "Old Elm," on Bedford Street.

Naval Architectural Society Dinner.—The annual dinner of the Naval Architectural Society was held on May 8 at the Technology Club. The guests of the evening were Professor Peabody, Captain Hovgaard, Mr. Rand, and Mr. W. K. Fairburn, superintendent of the Eastern Shipbuilding Company.

Mr. Hilkin, toastmaster, presented Professor Peabody as the first speaker of the evening. Professor Peabody was followed by Mr. Fairburn, who gave an excellent account of the construction of the ships "Minnesota" and "Dakota." Captain Hovgaard and Mr. Rand followed with a few words.

Chemical Society.—The last meeting of the Chemical Society this year was held at the Union May 15, for the election of officers for the following year. A. D. Smith, '04, was chosen president; A. W. Burnham, '04, vice-president; W. H. Keen, '05, secretary; F. W. Farrell, '04, treasurer; W. W. Duncan, '04, member of the executive committee. After the election of officers W. C. Martin reviewed the visit of the summer school to the Murphy Varnish Works of Newark, N.J. In the thesis work

M. H. Clark spoke on the "Functions of Diaphragms in the Electrolysis of Brine."

H. B. Pulsifer spoke on the "Effect of Temperature upon Catalytic Agents," and G. R. Spaulding reviewed the great advances made in bacteriology by Pasteur. Mr. Samuel Cabot, of the Corporation, and Dr. Walker, of the Faculty, were the guests of the evening.

Mechanical Engineering Society.—The society met at the Technology Club April 16. Mr. F. B. Gilbreth spoke informally on the methods used on rush work, the assembling of material and handling of the men. Mr. Gilbreth is well known to the Institute men as the one who built the Lowell Building in record time last summer. His talk was profusely illustrated by slides, showing the progress of the work on the Lowell Building, and a large power house at Cambridge.

The last regular meeting of the society was held at the Tech Union May 14. Short reviews of thesis work and results were given by members of the Senior Class.

Electrical Engineering Society.—At the Electrical Engineering Society "smoker" April 9, Professor A. E. Kennelly, of Harvard, gave a very interesting description of the laying of a cable in the Gulf of Mexico.

Civil Engineering Society.—The sixth annual dinner of the Civil Engineering Society was given at the Hotel Lenox on April 14. Fifty-two men were present. Mr. Paul Hansen, '03, was toastmaster. Mr. Carson, chief engineer of the Boston Transit Company, Boston Subway and East Boston tunnel, spoke on "Honesty, or rather Dishonesty, in City, State, and National Government." Professor Hollis, the head of the engineering department of the Lawrence Scientific School and president of the Boston Society of Civil Engineers, was next introduced. His subject, "The Fate of the Harvard-Yale Games," he left for *post-mortem* evidence, and took for a theme the advice given him on graduating from the Naval Academy,— "Keep your stomach in good condition: live to make use of other good men's brain," —to which he gave another version,— "Keep your dinner down and your courage up."

Other interesting remarks were made by Professor Clifford, Mr. Gilbreth, Mr. McKibben, and Professor Porter, and a telegram from Mr. J. R. Freeman was read, expressing regrets at inability to be present.

At the annual business meeting of the Civil Engineering Society, May 21, the following officers were elected for the ensuing year: Currier Lang, president; W. A. Kemper, vice-president; R. N. Turner, secretary; F. M. Carhart, treasurer; executive committee: F. H. Davis, A. H. Langley, and Le B. Turner; program committee, M. L. Emerson, W. W. Cronin, B. Blum, and H. M. Nabstedt.

From *The Tech*, April 23:—

FINANCIAL STATEMENT OF CO-OPERATIVE SOCIETY

In the columns of *The Tech* of October 9, 1902, there appeared an article recounting the advantages of the Co-operative Society to the student. A review of the work accomplished since then may be of interest to thinking students. A few facts and figures will show most readily what has been done.

This has been the most successful year in the history of the society. It was a noticeable fact that this year more upper classmen have bought and used membership tickets than heretofore, and in their use has been found great advantage. For example, from one firm alone on the "affiliated list"—the Continental Clothing House—\$431.89 has been refunded to students as ticket discounts on purchases since September.

The amount given in scholarships has also been greater than ever before. Last year \$612.50 was granted, while the society has been able this year to give \$887.50, besides leaving a balance in the treasury of \$471.11,—an increase of \$35.56 over last year.

During the past five years the society has expended in scholarships \$3,450, and since its organization \$7,812.

It has been the policy of the society in the past to grant scholarship assistance in a quiet way, the student himself not knowing whence his aid came. It is now believed that in future more fairness will be shown to all concerned by notifying the recipient of a grant.

Attention is called to the fact that a short time ago the society received a gold medal certificate of award for its exhibit in the Department of Economics at the Paris Exposition. This certificate has been framed and is

hung in the Trophy Room. Recently a bronze reproduction of the medal itself was received, and will shortly be placed on exhibition.

It is hoped that bringing to notice what the society has actually done this year will lead the students to avail themselves in larger measure of the benefits of the society.

LAWRENCE H. LEE,
President.

Musical Clubs.—The officers of the Musical Clubs have been elected for next year, as follows: president, Lewis G. Wilson, '04; vice-president, Frederick L. Higginson, '03; general manager and treasurer, Louis E. Robbe, '05; secretary, Joseph T. Lawton, Jr., '06; leader of Glee Club, Lewis G. Wilson, '04; manager Glee Club, Louis E. Robbe, '05; leader Mandolin Club, Charles Meyer, '05; manager Mandolin Club, W. W. Duncan, '04; leader Banjo Club, R. C. Jackson, '06; manager Banjo Club, Louis J. Killion, '05.

The Chess Club.—The New England champion, Mr. A. M. Sussman, played fourteen simultaneous games with members and visitors of the Chess Club, at the Union. The only M. I. T. winners were W. I. Lourie and M. Cline.

Technique, 1905.—The complete board is: editor-in-chief, Graf-ton B. Perkins; associate editors, George B. Jones, William Green, Norman Lombard; society editor, James McC. Lambie; athletic editor, Edward T. Steel; statisticians, Arthur J. Amberg, George DeW. Marcy; business manager, Waldso Turner; assistant business managers, Charles W. Johnson, William D. B. Motter, Jr.

TUITION AND FEES

It having been found that the requirement of a bond from students to secure payment of tuition and other charges has worked a hardship in some cases, and is at best unsatisfactory, it has been decided to abolish this regulation and in its place to ask the students to make deposits as follows: for the first year, \$10; for higher years in chemical laboratories, \$50; in mining laboratory, \$15 each year — and to make payment of both tuition and deposit on or

before November 1 or March 1. There being no bond, it becomes necessary to insist upon payment in accordance with the circular; namely, strictly in advance.

The administration believes that the new plan will be found much more satisfactory to all concerned.

HAROLD R. SWEETSER, CLASS OF 1905

One of the saddest drowning accidents on the North Shore for some time occurred June 16, when Harold R. Sweetser lost his life in Salem Harbor, off the Misery Island Club. Two other men, Captain George O'Nellos and engineer Francis Ray, both employed by the club, had narrow escapes. Sweetser was a student in the course in chemistry, and was about nineteen years old. He lived at 11 Akron Street, Roxbury.

THE GRADUATES

THE M. I. T. ALUMNI ASSOCIATION

The Association gave its annual reception to the graduating class, June 5, at the Hotel Brunswick. Nearly three hundred graduates and alumni attended, including members of the Faculty and Corporation. After partaking of salads and ices, the speakers were introduced by Walter B. Snow, '82, who presided in the absence of President Newell. President Pritchett was the first speaker, and said in part:—

Last June, when I met you, I was able to announce to you plans for the erection of the Lowell laboratories of electrical engineering. The building itself was put up during the summer, and was occupied during October. To-day nearly all the heavy machinery is in position, and I believe I am quite within the truth in saying that the facilities here given for instruction in electrical engineering are the most complete which are to be had on either side of the water.

Since I last met you, long strides have been taken toward the development of facilities and opportunities for research. The Graduate School of Engineering Research will offer to a few men the opportunity for research in applied science, particularly in the direction of electricity. In addition to this, by the generosity of a few friends and by gifts from the Hale Research Fund and the Carnegie Institution, a research laboratory in physical chemistry will be in operation by October next. A fund of \$5,000 given by a friend whose name is withheld is affording a most valuable opportunity for research in important sanitary questions.

Pending the decision of the question of our removal and the choice of a new location, the Executive Committee has found it necessary to erect for the use of the next few years an additional building on Trinity Place. It will be a two-story building one hundred and sixty-five feet long by fifty-eight feet wide, and will house the entire work of naval architecture, including provision for the naval cadets, the research laboratory in chemistry, and the work of crystallography. It will be known as "Engineering C," and will be ready for occupancy next October.

In this connection I have a message which is meant especially for the alumni. The site upon which this building is to go is that already assigned to the Walker Memorial Building, the funds for which have been already subscribed. Your Executive Committee, in placing this temporary building on this spot, directs me to say that this is done in expectation of an early removal, and that, should the Institute for any reason find itself forced to remain in the present location, a site equally satisfactory to the alumni will be assigned for the Walker Memorial Building.

As to the plan of removal, I can say nothing more than that which you already know. The first step has been taken in our appeal to the General Court of the Commonwealth. The bill conveying to the Institute the title to the land on Boylston Street has passed the House of Representatives, and is now before the Senate. If it passes, I have faith that we shall somehow find the means to transfer the Institute to a new home where the life may be fuller, the means of expansion easier, and the opportunity for the enjoyment of beauty more ready.

President Pritchett was followed by Mr. Frederick P. Fish, president of the American Bell Telephone Company, who spoke for the Corporation. Mr. Fish, in addressing the graduates, emphasized most emphatically the value of imagination, not imagination which is not the truth, but pure, wholesome thought.

Dr. Louis Duncan spoke for the Faculty.

Mr. Linwood O. Towne, the twenty-five-year graduate and submaster of the Haverhill high school, gave reminiscences of the class of '78 of the professors of Technology then, and of the methods of instruction in those days. "An M. I. T. man once said to me, 'I never knew the value of fifteen minutes till I came here.' It is, we older men have come to believe, this constant holding of our minds to the intellectual grindstone, this solving of hard, knotty, perhaps — we sometimes believed — impossible problems in all our work, that has fitted many of us for solving the still harder, even more perplexing life problems, whether strictly professional or in business lines.

"All education comes through the four channels,—men, things, books, or travel. I think the first is the strongest and broadest. It is the thing your president saw as most lacking in this growing college when he came here, the personal touch; and you know how he has fought for it even amid storms of misunderstanding.

"Just a word about 'pull,' which you are so apt to think you now need.

I dislike the word, but it is with us and must be considered. In a cheap way 'pull' means something to be gotten by a cigar, a drink, all sorts of appeals to the appetite or what is lowest. It means a man putting himself often under ignoble obligation. There always has been, there always will be, a Devery; but is there no other sort? The Technology man should be above this, but how? Is there such a thing as high-mindedness in 'getting a pull'? I believe there is. It is summed up in the words 'ability, agreeableness,' and that other most abused one, 'friendship,' the vigorous, manly, self-respecting regard that the well-trained, high-ambitioned man such as I believe Technology graduates have for others equal in manliness, training, high-mindedness, and endeavor."

President George W. Swett, of the graduating class, concluded the list of speakers. He gave a short but interesting talk, and was loudly applauded.

ASSOCIATION OF CLASS SECRETARIES OF THE M. I. T.

A special meeting of the Association of Class Secretaries was held at the Technology Club on Thursday evening, April 23, 1903, twenty-one members being present. The meeting was called to order at eight o'clock, and Mr. R. A. Hale, '77, was chosen chairman.

At a previous meeting of this Association, in November last, it was voted to suggest to the Alumni Association the desirability of the appointment of a committee to consider the advisability of co-operation between the Alumni Association and the TECHNOLOGY REVIEW. The secretary reported that a committee of the Alumni (Messrs. Munroe, '82, Newell, '85, and Morss, '85) had already been appointed to confer with the committee from the class secretaries. Upon motion of Professor A. G. Robbins it was voted that a committee of three be appointed by the chair to act with the committee of the alumni. The chairman named Messrs. Snow, Read, and Fay as this committee. Mr. C. F. Read, chairman, reported upon the progress of the work of the committee on closer relations among undergraduate organizations.

Dr. Tyler brought up the question of the publication of a directory of graduates and all other former students separate from the M. I. T. Catalogue. Discussion showed the sentiment to be gen-

erally in favor of such a proposition, and upon vote of the Association Messrs. Munroe, Robbins, and Fay were appointed a committee to consider this matter.

Upon motion of Dr. Tyler it was voted that a committee of three be appointed to consider and report upon the collection of certain statistics concerning marriages and children of Institute men. This committee, as appointed by the chair, consists of Dr. Tyler, Dr. Noyes, and Professor Johnston.

Acting on the recommendation of the committee on undergraduate organization presented at the previous meeting, the following votes were passed:—

1st. That secretaries of the undergraduate classes be made Associate Members of this Association.

2d. That the Institute Committee be requested to take each year whatever action may be necessary to insure, as far as possible, the election of suitable undergraduate class secretaries.

3d. That this Association provide catalogue cases for each of the four Institute classes, and supply each class now at the Institute, and all future classes, with standard catalogue cards.

4th. That the Institute officials be requested to provide a suitable repository for these class catalogues.

5th. That a member of this Association be delegated each year to advise the secretary of the Freshman Class upon the question of preparing a class catalogue.

Article IV. of the By-laws concerning membership in the Association was amended to read as follows:—

The membership shall consist of the secretaries of all graduate classes, and of all local alumni societies, the president and secretary of the Alumni Association, the president of the Technology Club, the secretary of the Faculty, the secretaries of the four undergraduate classes of the Institute, and the president of the Institute Committee. In case a class is without a properly constituted secretary a representative of that class shall be called upon by the secretary of this Association to act as representative for said class until such class secretary be appointed. Any class secretary or secretary of a local society, unable to be present at any meeting, shall appoint a member of his organization as his representative, and to said representative shall be accorded

all the powers which would be exercised by the secretary if he were present.

It was voted that the five votes concerning undergraduate organization and the amendment to the By-laws take effect at the beginning of the Institute school year of 1903-04.

The meeting adjourned at ten o'clock.

FREDERIC H. FAY, *Secretary*.

60 City Hall, Boston, Mass.

CONNECTICUT VALLEY ASSOCIATION

The Connecticut Valley Association is a shoestring district, extending from Saybrook to the Canadian woods, and it's a hard problem to round up the fellows on this train; for it's "all long and no wide," as the Frenchman said of his farm. But there are a lot of us here, and we run into each other now and then, and perhaps have a lunch or two in the course of six months. You city chaps, with your clubs and little dinners, are a source of heart-burning to us. We want to be in it; but, until there's rapid transit up to town from this valley to the tune of two hundred miles in thirty minutes, we see no prospect for much of this sort of luxury. But, then, we pity you, too, for soft living will undo you, sure's fate. Be warned in time by the prophets in the wilderness of the Connecticut.

Here are a few items which have come to hand lately. I don't give the class years of the men. We out here are famous enough to drop these labels. If you fellows don't recognize us at first sight, look us up in the Tech directory, and don't forget us again.

N. P. A. Carter, electrician in Springfield, has fifteen to twenty men in his employ. They are all over the valley and the city. He is doing expert work. Last winter he was in demand as a lecturer, and worked up an evening on wireless telegraphy that delighted popular audiences. He could explain to inquiring old ladies, "How ever did that electricity get through that brick wall?" with a lucidity past description. Carter is chairman of the school board for his city, Chicopee, and a leading citizen.

Guy Kirkham is still planning beautiful homes for Springfield and vicinity. He is an artist to his finger-tips, and has a strenuous time trying to induce people who "want a pretty house" to consider a Græco-Colonial porch equal to a jig-sawed "piazza." He is successful in it. Guy recently sent his compliments to "Teddy," with assurances of support, in the announcement of his fourth baby.

Paul Hawkins, of Springfield, is still selling iron boilers and bridges and things like that. He is a chief something of the Spanish war veterans, and has a whole string of military titles. Been on the governor's staff.

Springfield is full of Tech architects. It is the "city of homes," you know. The boys have made it so. Not one of them will design a tenement block, hardly a palace flat, for less than 50 per cent. commission, and that has discouraged all attempts. G. W. Taylor is hard at work. He puts in days, nights, and Sundays at his loved profession, and his houses bear the stamp of the right stuff of the Tech sort.

There's George Gardner, associated with his father, the pioneer firm in really artistic house architecture out this way. We remember when the elder Gardner began to pull down the gingerbread houses about here. His earliest houses are still admired for a true artistic quality. George will do some excellent work when he gets older.

James S. Newton, of Holyoke, has pulled out from most of his Holyoke business connections. The Massachusetts Screw Company, which was founded by his father, and of which he was treasurer for some years, has been sold. Newton is in some of the banks, and has other city interests; but it is quite possible that Boston business connections will take most of his time hereafter. Munn is trying to keep the association alive long enough to set them a-going again in a dinner one of these days, when some big Tech gun can be landed at the board. He is editing the *News*, in Easthampton, and when you chaps are on Mount Tom, "finest view in the world," look down on him with kindly eye, and drop in on him if you can. He is getting bald, but his pen is young as ever.

Next time I'll send a more serious-minded epistle, and will dig up a score of the fellows at least. Good luck go with you for M. I. T.

GEORGE L. MUNN, '88, *Chairman Exec. Com.*,
Easthampton, Mass.

THE NORTHWESTERN ASSOCIATION OF THE M. I. T.

The following is from a special June bulletin of the Association:—

Great was the success of the last meeting. Think of forty-six men at a monthly dinner for a record-breaker. The Chicago Athletic Association served as fine a dinner as could be desired; and, with flowers, wines, cigars, and cigarettes furnished from our surplus (?), we certainly had a fine feast.

The music was novel and enlivening. Unfortunately, owing to sickness (*à la Calvé*), our quartette was unable to get together, so "Con" Young, '95, and Emery, '90, furnished a number of good selections, which, supplemented by our worthy president's marked efforts, brought the affair to its requisite dignity. Of course, we all did our little best to help, too.

Letters and telegrams of regrets flowed in on us from those unfortunates who were kept away at the last minute, so we knew we were the elect.

John Meiggs Ewen, of the Fuller Construction Company, gave a talk on his method of building subway structures. Each member received a printed synopsis of the same, showing drawings applying the method to subways, office buildings, etc. Briefly, the method consists in sinking trenches to the requisite depth, bracing the sides of each trench as sunk, and then removing the core between trenches.

The above papers themselves were worth coming a long way to hear, but when to them you added the most finished talk by that accomplished after-dinner speaker, Professor Butler, of the University of Chicago, ex-president of Colby University, you certainly got your money's worth. Professor Butler's address was a plea for higher culture, for the finer sides of life, which, interspersed as it was with a number of brilliant anecdotes, brought forth round after round of applause.

The secretary has a total of about three hundred and twenty-five names for the new directory, and hopes to have it out in time for this month's meeting.

The Draper Medal, awarded biennially by the National Academy of

Sciences for astronomical advances, was given to Professor George E. Hale, '90, of the Yerkes Observatory, Williams Bay, Wis., for his recent researches on solar and stellar spectroscopy. The *Scientific American* says, "Dr. Hale is one of the youngest members of the Academy, but he has already achieved a high reputation for his brilliant researches in the domain of celestial physics."

V. R. LANSINGH, '98, *Secretary-Treasurer*,
18 East Adams Street, Chicago, Ill.

THE TECHNOLOGY CLUB OF NEW YORK

The April meeting was held at Hotel Hungaria on the 10th. There were forty-five present. After dinner the members visited Barnum's Circus. On May 9 the club visited the St. Regis Apartment Hotel, under the guidance of C. V. Merrick, '00. In the evening forty-one members dined at the Arts Club. Talks were given by Tabor Sears, Esq., on the Decoration of High Buildings, and by Theodore I. Coe, Esq., on the Erection of High Buildings. The June meeting was held on the 10th at the Arts Club. There were thirty present. The following House Committee was elected: Henry D. Hibbard, '77, chairman; Robert S. Allyn, '98, secretary, 41 Park Row; Alex. Rice McKim, *ex officio*; J. H. Adams, '99; W. G. Pigeon, '00; and F. A. Colby, '01. After dinner a social evening was spent in the galleries of the Arts Club, G. A. Taber, '94, putting the piano out of tune. The following were elected members by the board: Martin Gay, '77; B. L. Chandler, '84; D. C. Campbell, '85; Burt Cushing, '87; W. D. Sargent, '87; L. D. Boynton, '89; B. L. Fenner, '91; L. G. French, '91; C. V. Allen, '93; J. I. Solomon, '93; W. R. Squier, '95; M. Davenport, '00; W. A. Dorey, '00; H. C. Morris, '01; and A. L. Weil, '01. Total membership, 174.

The Association has recently been incorporated under the laws of the State of New York, under the above title. It is the purpose of the prime movers in the project to make the organization as near like the Boston Technology Club as possible, and, as a first step in that direction, a club-house will be opened this coming fall. The main floor of the house which is to be taken for this purpose

is to be reserved for general club purposes, and will have a lounging-room and a reading-room. Provision will be made for the playing of various games, and the house will afford a general meeting place for Tech men living in New York and its vicinity. The upper floors will be fitted as sleeping apartments for twenty members, with a few rooms reserved for visiting Tech men. The club is at present in a most flourishing condition, with a membership roll of 167, and it is confidently expected that this will be increased to at least 200 before the end of the year. At present the meetings of the club are held at the various New York clubs, and consist of a dinner, followed by an excursion of some sort.

ALEX. RICE MCKIM, *Secretary*,
106 East 23d Street, New York, N.Y.

THE TECHNOLOGY CLUB

The last talk of the season of 1902-03 was a Ladies' Night, and was given by Mr. Herbert W. Gleason, a member of the Appalachian Mountain Club, his subject being "Rambles in the Canadian Alps." His lecture was profusely illustrated with lantern slides from photographs taken by himself.

The address was divided into three sections,—Lake Louise and its surroundings, the Yoho Valley, and the great snow plain from which the glaciers descend.

The following was sent out to all members of the club early in June:—

This club differs from the usual social organization in that, besides furnishing the facilities and comforts of the ordinary club, it aims also to bring Institute men more closely together, to keep them in touch with Institute affairs, and to make its club-house a centre and gathering-place for the whole body of officers and students who have been connected at one time or another with the Massachusetts Institute of Technology. Therefore, there seems to the Executive Committee no impropriety in reminding the members from time to time of what their club offers to them, and in urging them, for the sake of the Institute as well as for their own pleasure, to make the fullest use possible to them of what the club-house presents.

The club-house contains, on the first floor, a large dining-room for men and a smaller one for ladies; a "Common-room," occupying the entire second floor; a "Quiet-room," on the third floor, for reading, writing, or committee meetings; a billiard-room on the fourth floor; and on the two upper floors three bedrooms.

THE DINING-ROOMS

Table d'hôte breakfast (forty cents) is served from 7.30 to 9 A.M., lunch (forty cents) from 12 M. to 2 P.M., and dinner (sixty cents) from 6 to 8 P.M.

Lunches or dinners more elaborate than the regular *table d'hôte* will be served if ordered of the steward a few hours in advance.

Special luncheons or meals may be obtained, upon due notice to the steward, at any hour between 7.30 A.M. and 11 P.M.

Members may bring friends who are not eligible to club membership—that is, who are not or have not been in any way associated with the Institute of Technology—to the restaurant and to the club-house in general as frequently as they may choose. Persons eligible to club membership, however, may not be brought more often than once in thirty days. Guests may also be introduced by cards, to be had of the steward, in accordance with the rules usual in clubs.

A small dining-room looking out upon the Institute campus is reserved for ladies. This part of the club-house is open to members accompanied by ladies, or to ladies presenting the visiting card of a member, from 12 M. to 2 P.M. and from 6 to 8 P.M. every day.

The club is prepared to furnish special dinners, either simple or elaborate, for class or other organizations, upon arrangement with the steward. The cuisine of the club is equal to that of the best hotels, and the prices for such dinners are more moderate. It is the custom of some of the Institute classes to meet informally for dinner at the club at regular and frequent intervals, and it is hoped that the practice will become general among the graduate classes. For attendance upon all such dinners of classes and other organizations men need not be members of the club.

Special prices have been established for members wishing to take all their meals at the club, and it is suggested that men whose families are away during the summer will find the club a particularly pleasant place at which to live. Members living in bachelor quarters are urged to consider the plan of securing rooms in the vicinity and of taking their meals at the club-house.

THE COMMON AND QUIET ROOMS

In these rooms are open fires, a library, about fifty current periodicals and newspapers, and ample facilities for correspondence. These rooms look out on the Institute campus, and are comfortably and attractively furnished.

These rooms are freely at the service of members, upon proper notice to the Steward, for small committee and other meetings; and in connection with such meetings arrangements may be made for the serving of inexpensive lunches.

BILLIARD-ROOM

This room is artistically fitted up, and contains both a billiard and a pool table. A charge of thirty-five cents per hour is made for the use of a table.

BEDROOMS

The house contains three bedrooms, the charge for one being a dollar a day. A member may not occupy a room continuously for more than one week except by special permission of the House Committee.

As the house fronts upon a large open space, these rooms are very cool in summer; and, the windows being screened, there is no annoyance from mosquitoes or flies.

Non-resident members are urged to make the club their headquarters when visiting Boston. By writing or telegraphing a day or two in advance, they may be almost certain of securing a room.

A long-distance telephone, free to members within the so-called Boston Division, is on the first floor.

Cigars and cigarettes are on sale at the office, and smoking is permitted in all parts of the house excepting the ladies' dining-room.

"Smoke-talks" and other club evenings are held at frequent intervals during the winter. During the season just closing such talks have been given by Presidents Pritchett, Schurman, and Hopkins; Professor William H. Niles; Messrs. William Ralph Emerson, W. Lyman Underwood, C. Howard Walker, and Herbert W. Gleason; Señorita Huidobro; Herr Heinrich Conried, Dr. Benjamin Sharp, and Dr. John C. Bowker. Many of these talks have been illustrated with the stereopticon.

Since moving from its old quarters at 71 Newbury Street into its new house at 83 Newbury Street, the use of the club by its members has increased very much and with highly gratifying results. It is desirable, however, that members should avail themselves in even higher measure of this

opportunity to meet one another and to identify themselves with the life and work of the Institute of Technology. To that end this general notice is sent out.

Information in regard to the club, copies of notices, membership application blanks, etc., may be obtained at the club-house or by writing to Walter Humphreys, Secretary, 83 Newbury Street, Boston, Mass.

JAMES P. MUNROE, '82,
FRANCIS H. WILLIAMS, '73,
WALTER HUMPHREYS, '97,
ANDREW D. FULLER, '95,
SETH K. HUMPHREY, '97,
FREDERICK H. BAILEY,
HARRY W. TYLER, '84,
Executive Committee.

NEWS FROM THE CLASSES

1868.

PROF. ROBERT H. RICHARDS, *Sec.*, Mass. Inst. of Technology,
Boston, Mass.

Professor Robert H. Richards and Mrs. Richards have gone to Washington and Alaska for the summer.

1870.

PROF. CHARLES R. CROSS, *Sec.*, Mass. Inst. of Technology,
Boston, Mass.

J. A. Osgood wrote on May 24 from Sierra Madre, Cal., in part as follows: . . . "I am just now looking after my lemon ranch here, but expect to be off in the field again soon. By night work I have taken the mining engineer course of Scranton, and had a six months' practical course (nights) in assaying. I am fond of this class of work, and deeply do I regret that army ailments and poor eyesight prevented my taking a full course in mining engineering, when young, at the M. I. T. I am expecting to visit Arizona and Mexico soon. This is a beautiful country here, but we are absolutely dependent on irrigation. We have had some six years of very little rainfall before this year. Being driven to desperation for want of more rain, the energetic men of the ranches have, however, developed enormously the flow of water from wells by pumping, until now we have abundance of the precious fluid where once was desert land."

1873.

SAMUEL E. TINKHAM, *Sec.*, City Hall, Boston, Mass.

Joseph H. Barker died July 12, 1902, at College Hill, near Cincinnati, Ohio.

1876.

JOHN R. FREEMAN, *Sec.*, 145 Morris Avenue, Providence, R.I.

Theodore E. Schwarz spent three months a year ago in California, recuperating from high altitude work in Leadville, and writes that the low altitude, balmy climate, and orange blossoms were strong inducements to remain on the coast after twenty-five years of Colorado. He is devoting himself to professional work with office in Denver, and has just returned from some expert work in Southern Mexico. He reports mining operations in Mexico active, and much capital going in. The low wages and absence of labor unions, together with the stable conditions and strong mineral belts, are excellent incentives to investors.

1877.

RICHARD A. HALE, *Sec.*, Lawrence, Mass.

In the New York *Tribune Review* for Saturday, May 16, there appeared an article on Civil Engineering by George F. Swain, this being the thirteenth paper of a series entitled "Careers for Coming Men."—The secretary saw George W. Kittredge about a month ago. As chief engineer of C., C., C. & St. Louis, he has been very busy in connection with legal matters relating to the Wabash entering Cincinnati through the Big Four's freight yards.—John Alden is chairman of the Andover School Committee, the duties of which keep him very busy at this season of the year.

1878.

E. A. W. HAMMATT, *Sec.*, 10 Neponset Block, Hyde Park, Mass.

The second of the informal June meetings of the class, so successfully inaugurated last year, was held at the home of the president, 17 Nottingham Street, Dorchester, on June 16, 1903, at 8 P.M. It was especially enjoyable because of the presence of several who

have not been able to meet with us for many years, and also for the music. The attendance was as follows: B. L. Beal, Frank Dabney, Herbert Dabney, Mr. and Mrs. E. S. Dorr and daughter, Charles W. Goodale, Mr. and Mrs. E. A. W. Hammatt, Mr. and Mrs. Thomas Hibbard and family, Mr. and Mrs. G. W. Lewis, Dr. W. H. Ruddick and lady, Mr. and Mrs. H. E. Stowe, Arthur W. Temple and son.—H. E. Stowe's address is now Walnut Street, Newtonville, Mass.—Crosby was unable to be present at the meeting on account of absence in Nova Scotia, Kinnicutt because of sailing for Europe.—Shockley is in Peru, but is expected to return in September.—Conover has a daughter graduate at Wellesley this year, and Frank Dabney one from Bryn Mawr.—George Osgood has at last been heard from.

1881.

FRANK E. CAME, *Sec.*, 17 Place d'Armes Hill, Montreal, P.Q.

Major Frank H. Briggs, chairman of the Advisory Council on Athletics, accompanied the track team to Hanover, N.H., and Worcester, Mass., on the occasion of the athletic meetings there in May.

1882.

WALTER B. SNOW, *Sec.*, Russell Avenue, Watertown, Mass.

A party of eighteen, consisting of Gooding, Herrick, Hersey, Jenkins, Low, Mansfield, Munroe, W. B. Snow, and Warren, with ladies, attended the "Pop Concert" on Tech night, June 9.—Mansfield is now associated with the Eastern Electric Contract Company, 436 Board of Trade Building, Boston. His home address is The Bartlett, Haverhill, Mass.—J. H. Ross has returned from his European trip.—Gardiner is still abroad.—A. W. Walker presented a paper on "A Simple Device for Ascertaining the Average Silicon in an Iron Mixture" at the recent Milwaukee convention of the American Foundrymen's Association.—Among the papers presented at the recent meeting of the American Society of

Mechanical Engineers was one upon "The Mechanics of Air-brake Systems," by H. G. Manning.—Brackett is now in Rutland, Mass., but expects to return to Boston in the fall.—Warren is busy in connection with patent suits in which the United Shoe Machinery Company is interested.—At the May meeting of the American Unitarian Association Professor Frederic N. Noa spoke on the prospects of Unitarianism in Cuba, where he has recently been engaged in work for the Association. "The dominant faith in Cuba," said he, "has been for four centuries the state religion under Spain. The priesthood of this faith, with a few honorable exceptions, is full of debauchery. Yet there are gradual signs of improvement, owing to the efforts of Protestant missionaries. The people of Cuba may be divided into three classes, the first being the highly cultured minority, and the third the vast majority of the people, densely ignorant and superstitious, yet affectionate, docile, and easily led into the right path when sympathy and tact are shown. There is much scepticism, and this is one of the hardest obstacles to overcome. The intellectual classes are usually free thinkers, with a strong bias toward Unitarian ideas. Unitarian ideas are in the atmosphere in Cuba, but they need to be crystallized."

1883.

HARVEY S. CHASE, *Sec.*, 27 State Street, Boston, Mass.

George H. Bryant, of Newport, R.I., is president of the Eastern Manual Training Association.—On May 12 the secretary sent out the following circular relative to the twentieth reunion of the class:—

Thursday, June 25. Reunion dinner at Technology Club, 7 P.M. Class History and Reports. Election of Officers. General Jamboree.

Friday, June 26. Take steamer in morning for Misery Island, off the North Shore, lunch, dinner, and night there. Boating, tennis, golf, swimming, and general jollification. Club-house there with all the frills and fixings.

Saturday, June 27. Steamer or rail in morning to Boston. Meet

M. I. T. professors at Technology Buildings, and examine the new departments, shops, etc. At 4.45 take electric and automobiles over Commonwealth Boulevard and Newton Boulevard to Birch Hill, Newtonville, residence of the secretary. Informal reception on lawn there for an hour, and then dinner at the Newton Club. Final spread, final speeches, and final geejy-whisker.

These three days and evenings will give us a ripe old round-up. We propose to invite all specials and others who were with the class at the beginning to come in for this festivity.

Sunday has been left open for the men to get together as they wish or for travelling. Special arrangements will be made for those desiring to continue the outing over Sunday.

How does this hit you?

Please write the secretary immediately. Boston was the almost unanimous choice of the class as the place for the reunion, as shown by replies to the secretary's first epistle.

Every reply was favorable to the idea of reunion, and nearly all were quite sure of being present. Make a strong effort, old man, to arrange your dates so as to be with us to have a thoroughly good time.

Please answer promptly, and thereby greatly assist the committee, Bryant, Gale, and Underwood, and the secretary.

HARVEY S. CHASE, *Secretary*.

1887.

EDWARD G. THOMAS, *Sec.*, 4 State Street, Boston, Mass.

George Otis Draper will sail on the 18th of June for a two months' trip to the north of Europe.—T. W. Sprague is engaged in an investigation of coal properties in the South, and will probably be away the entire summer.—Cameron has just completed an extensive addition to his house at Westford, of which Gay was the architect. It comprises a very large living-room, billiard-room, and chambers, all of which command a beautiful view, extending for miles, over the Merrimac River valley. Maurice W. Cooley sailed from New York on June 29 for Port of Spain, Trinidad, B.W.I., where he is to become manager of the New Trinidad Lake Asphalt Company, Ltd., having entire charge of the production of the asphalt from this famous source of supply. He will also have entire charge

of the Bermudez Asphalt properties in Venezuela. It is expected that the product of the Trinidad Lake Company this year will exceed 100,000 tons.—An informal dinner of the class in Boston and vicinity was held at the Technology Club on Thursday, June 18, and was attended by H. S. Adams, Bullard, Burgess, Cameron, Coburn, Gay, H. D. Sears, Spaulding, Stewart, E. G. Thomas, and Young. Burgess told more or less of what he has been doing in the last two years in California, and stated that after a three months' trip abroad this summer he would be located in New York City for a couple of years.—Stewart has returned from his winter home at Pineville, N.C., to spend the summer in Everett. He finds that his health is very much improved in the South, intends making his future home there, and is conducting a general store.

1888.

WILLIAM G. SNOW, *Sec.*, 245 N. Broad Street, Philadelphia, Pa.

B. R. T. Collins has resigned from the Chicago Edison Company, and on May 4 became connected with Stone & Webster, 93 Federal Street, Boston. Collins is very happy to renew his old associations in the East.—J. Edward Fuller is now located at 137 Broadway, New York, having removed from Worcester, Mass.—Addison D. Nickerson has resigned his position as engineer to Sewer Commissioners, Hyde Park, Mass., where he has been located for the past few years, and is now making surveys and sewer studies in the various towns in the Catskills for the Commission on Additional Water Supply for New York, N.Y.—C. H. Mower is with the Sturtevant Engineering Company, Queen Victoria Street, London, England. He has recently been engaged in the installation of a number of heating and ventilating plants on the Continent, where American apparatus is becoming more commonly used.—The fifteenth anniversary of the graduation of the class was celebrated on June 20 by a field day, with a class dinner in the evening. Details will be given in the October number.—George E. Clafin was unable to be present at the class reunion,

owing to the burning of the Casino owned by the Asheville (N.C.) Street Railway Company, of which he is the general superintendent.

1889.

WALTER H. KILHAM, *Sec.*, 9 Park Street, Boston, Mass.

The secretary's illness with typhoid fever during the winter and spring prevented his sending any report to the last REVIEW.—F. H. Thorp writes as follows:—

Our class dinner last year and the Class Book brought home to me the fact that I have been remiss in reporting experiences during past years, but I will try to do better hereafter. But there is little to write this time.

The most important item is the Summer School of Industrial Chemistry, conducted last summer by Professor Talbot and myself. Our party of fourteen students left Boston, June 12, and spent two weeks in the neighborhood of New York and Philadelphia, visiting factories and studying processes in operation.

We were most cordially received everywhere, and, while we found the name of the Institute well known, I trust we left a better idea with the manufacturers of the character of our work and of the kind of men which the Institute graduates than they previously had; and we hope that this will be of subsequent benefit to the Institute.

Space will not permit of a detailed account of our trip, but in all we visited some sixteen establishments. In several places we were received by former Institute graduates, and to their efforts our trip owes much of its success. Especially pleasant was our meeting with Messrs. G. H. Gustin, '83, C. B. Kendall, '87, W. H. Thomas, '96, Dickson Q. Brown, '98, George F. Ulmer, '98, and P. E. True, '00, who one and all exerted themselves on our behalf. Several of the manufacturing concerns provided us with entertainment in the way of excursions and refreshments in connection with our visit to their works.

After the party disbanded at Philadelphia, I made a further trip to Pittsburgh, where I visited numerous manufacturing plants and attended the meetings of the American Chemical Society. Later in the summer, while making a short trip on Lake Champlain, I had the unexpected pleasure of meeting President Pritchett on the boat, he being on his way to a summer camp in Northern Vermont.

Soon after that, school opened again, and the usual quiet routine of work keeps me busy.

— The Philadelphia *Public Ledger* of March 2, 1903, has the following about a building designed by John Hall Rankin of '89: —

Within a period of less than two years the beauty of the city of Camden will be enhanced by the erection of a new county court-house, at a cost to the city of over half a million of dollars, to be erected in the business centre of the city on the site of the present county buildings, Broadway, Market, Federal, and Sixth Streets.

The building will be 201 x 110 feet, and will be constructed of Indiana limestone, or something similar, and be surmounted by a large dome. The main entrance will be on Broadway. Two corridors, each ten feet wide, will run through the building north and south, with double doors at either end of each corridor. There will be two elevators for the public, one at either side of the rotunda in the centre of the building. An elevator to the jail will be situated on the Sixth Street side.

The first floor will be occupied by the county officials and rooms for freeholders and their committees. On the second floor there will be Supreme, Circuit, and Criminal Court rooms, prosecutor's office, deliberation-rooms for jurors, and room for witnesses.

On the third floor there will be two additional court rooms, one for the Court of Chancery and one for the District Court, bar library, and dormitories for jurors. On the fourth floor the jail will be located on the Federal Street end, and there will be one hundred and twenty-two cells in two tiers. In addition there will be fourteen cells for females, six cells for juveniles, and six cells for civil prisoners and witnesses. The offices, pantry, kitchen, and infirmary will be situated on the Market Street end.

The building, when completed, will resemble somewhat the central portion of the United States Capitol in Washington, having a dome of nearly the same dimensions as that in Washington, although not nearly as high.

The working drawings for the structure will be ready in three months, and at that time bids for construction will be invited. In order that there may be no delay in the work the Board of Freeholders is authorized to issue \$630,000 worth of bonds to pay for erecting and furnishing the building.

The architects will be Rankin & Kellogg of this city, who were also the architects of the new Federal Building in Camden. The firm will have three months to prepare the working drawings, and as soon as completed

bids for the construction of the building will be invited. The estimated cost of the building will be about \$550,000.

— G. R. Alley was married in April to Miss Miriam Stedman, of Brookline.— Messrs. Rankin & Kellogg announce that Mr. Edward A. Crane, '89, has been admitted to partnership under the firm name of Rankin, Kellogg & Crane, 1012 Walnut Street, Philadelphia.

1890.

GEORGE L. GILMORE, *Sec.*, Lexington, Mass.

Major Charles Hayden, aide-de-camp to Governor Bates, has returned from his tour of duty at the St. Louis exposition as Massachusetts representative on the staff of General Corbin. His itinerary, however, was not confined to Missouri, for previously he visited Birmingham, Ala., and Atlanta, Ga., where the Boston banker-soldier has quite a contingent of enthusiastic friends.

1891.

HOWARD C. FORBES, *Sec.*, 4 State Street, Boston, Mass.

Charles Garrison has just taken the New England agency for the De Laval Steam Turbine Company, with an office at 4 State Street, Boston, Mass.— James W. Pierce has been made city engineer at Cambridge, Mass.— Miss Margaret E. Maltby, A.B. Oberlin and S.B. Massachusetts Institute of Technology 1891, has held the Association of Collegiate Alumnae Foreign Fellowship and the Savage Fellowship of the M. I. T. She received the degree Ph.D. from Göttingen University in July, 1895. Physics was her major, and chemistry and mathematics her minor subjects. She remained in Göttingen a third year, to do research work under Professor Nernst. She spent the year 1898–99 as private research assistant to President F. Kohlrausch der *physikalisch-technischen Reichsanstalt zu Charlottenburg*. The following year was spent at Clark University, working in

theoretical physics under Professor Webster. Since the autumn of 1900 she has been instructor in charge of the department of chemistry at Barnard College. This spring she was appointed to an "adjunct professorship of physics in the university, and assignment to the direction of that portion of the work of the Department of Physics which is given at Barnard College."—Following is a report of the twelfth annual meeting and dinner of the class, which was held at the University Club, Boston, on April 24 : —

At this meeting of the class seventeen members were present : Alley, Bowen, Bryden, Conant, Dana, Dart, Douglass, Fiske, Garrison, Hatch, Kimball, J. W. Pierce, J. G. Thompson, Trowbridge, H. L. White, Wilder, Young. President Fiske presided, and the report of the secretary-treasurer was read and accepted. The election of officers for the ensuing three years was held, with the following result : Charles Garrison, president ; Howard C. Forbes, secretary-treasurer. The same Entertainment Committee was appointed,—Alley, J. Campbell, Dart, Forbes, Goodwin. The change of secretary every three years was discussed, and it was considered expedient to change By-law I., so as to make this office permanent. This will aid the class, since it will always have the same person with whom to correspond, and the men will be more likely to send news if they are not in doubt as to where to send it. It will aid the Institute, since it is much easier for it to keep in touch with the same officer, and through him with the class. It is hoped that the men will correspond freely with the new secretary-treasurer, 4 State Street, Boston, Mass., and give him notification of changes and points of interest in their business, home, and social life. It is upon such information that the secretary depends to do his share in filling the columns of the *TECHNOLOGY REVIEW* every quarter.

It was then unanimously voted to change By-law I. to read as follows : —

§ Officers shall be President and Secretary-Treasurer.

§ The President shall serve for three years, and no member shall hold this office for more than one term in succession.

§ The Secretary-Treasurer shall serve for life.

§ Election to take place at the annual meeting, and a majority of those present shall elect.

It was further voted that the new officers appoint a committee of those members about Boston who should attend the meetings, but who fail to respond, this committee to be used to increase the attendance of the annual

dinner, since it would seem that at least forty could be present if they so desired. It will be the custom hereafter to have members of the association give short talks on matters of special interest in their own business life, which is always interesting to the class in general.

A letter was read from Edward Cunningham, from Santa Barbara, Cal., where he has settled for the present for his health. He is just building a house, and finds the delightful climate has enabled him to regain his strength. All present were delighted to hear from their past president, for whom they have a warm regard.

Shattuck sent his best wishes, and many regretted their inability to attend, due to distance or illness.

The salaries were averaged as usual, and as a matter of interest they are tabulated, covering the past seven years.

<i>Years</i>	<i>Average</i>	<i>Highest</i>	<i>Lowest</i>
1897	\$1,400	\$2,200	\$600
1898	2,124	8,400	1,000
1899	2,154	5,000	1,200
1900	2,457	6,000	1,200
1901	3,200	7,500	1,500
1902	3,447	6,000	1,300
1903	3,491	7,500	1,500

Business being over, Mr. Garrison gave a talk about the De Laval Steam Turbine, having brought a 30 H. P. wheel and shaft for purposes of illustration. Comparisons were made with the two other standard types; viz., the Curtis Turbine, of the General Electric Company, and the Parsons Turbine, of the Westinghouse Electric and Manufacturing Company.

Mr. Trowbridge then gave a description of his visit to the General Electric Company shops, where he saw one of their large 7,500 H. P. turbine generators being completed. Mr. Trowbridge is chairman of the Building Committee of the United Shoe Machinery Company, and is looking into the matter of turbine power for the new plants about to be erected. He is also looking into the matter of having the buildings built entirely of cement, and this brought up some chemical problems upon which Mr. Wilder enlightened the audience.

The interest seemed to be very general during the dinner and discussions, and all appeared to have had a most enjoyable evening.

The treasurer's report for the past three years is condensed below as follows:—

FROM APRIL 21, 1900, TO APRIL 24, 1903.

Dr.

Balance from 1899	\$19.60
Dues, subscriptions, etc.	274.80
Received for dinners, '01-'02	115.00
	<u>\$409.40</u>

Cr.

Printing and postage	\$66.48
For dinners, '01-'02	116.25
Class Decennial Book	143.50
Association of class secretaries	19.20
	<u>\$345.43</u>
Balance on hand	63.97
	<u>\$409.40</u>

I wish to thank the class for their liberal subscriptions of one dollar toward the Decennial Book, and for their payment of back dues. I would suggest, when remitting for dues, that one dollar be sent covering a two years' period. This will make collections easier for the secretary, and probably more acceptable to the members.

In order that members will make no prior engagement, let it be understood that the next annual meeting and dinner will be held Friday at 6.30 P.M., April 29, 1904.

CHARLES GARRISON, *Secretary-Treasurer.*

MAY 1, 1903.

1892.

PROF. WILLIAM A. JOHNSTON, *Sec.*, Mass. Institute of Technology,
Boston, Mass.

Henry Lewis Johnson, whom some of the class will remember as the publisher of *Institute Views* during our Sophomore year, is now connected with the University Press, Cambridge, as editor of the *Printing Art*, a magazine published monthly, and devoted to representative examples of American typography and processes of printing.—Edwin Childes Hall, Jr., was married to Maude Duncan Whiton on Wednesday, April 22, at Newton, Mass.—George Shepard Keyes, of Concord, was married to Alice Munroe

Brown, of Belmont, on Wednesday, June 3, 1903, at Belmont, Mass. Leonard Metcalf, our class president, officiated as best man. Keyes was connected with the class during the Freshman and Sophomore years, and has since developed a very profitable brokerage business in Boston.—W. Spencer Hutchinson, who until recently has been manager of the Boston Get There Zinc Company, Carthage, Mo., has returned to Boston and opened an office at 101 Milk Street, where he may be seen as consulting mining engineer. Hutchinson intends to make a specialty of mine examinations and reports, organization, development, and direction of mining and milling operations, and to give special attention to gold, zinc, and lead ores.

1893.

FREDERIC H. FAY, *Sec.*, 60 City Hall, Boston, Mass.

The decennial celebration of the class was held on Tuesday and Wednesday, the 9th and 10th of June. On Tuesday, Commencement Day, class headquarters were opened, at noon, at Hotel Brunswick. Our room was on the first floor just above the "chapel," and overlooking Boylston Street and the Rogers and Walker Buildings. Early in the afternoon the members began to assemble, one of the first to arrive being Henry Morss, who brought a large class flag of orange, bearing the figures "'93" in striking black. This flag of our old class colors made a most acceptable decoration for the headquarters, and was destined to take a prominent part in the celebration. The afternoon was devoted to a class reunion, to examining the decennial catalogue (advance copies of which were issued on that day), and to visiting the various buildings under the guidance of Spofford. At the close of the graduation exercises we had the pleasure of entertaining at our headquarters a number of '98 men who had been attending the exercises in Huntington Hall. Members of other classes and some of the Faculty also called upon us, and all were refreshed at the punch bowl. The class of '98 was at this time holding its quinquennial celebration with headquarters at the Technology Club. As a matter of

course, '93 was not slow in accepting the invitation to visit '98, and the reception extended us at the latter's headquarters was indeed a royal one. Late in the afternoon we had the pleasure of welcoming our honorary member and most loyal friend, Professor Fred Parker Emery, our first instructor in English. Professor Emery, who is now a member of the Faculty of Dartmouth College, his Alma Mater, came down from Hanover for the purpose of attending our decennial dinner.

The business meeting was held at half-past six, President Blood presiding. The entire board of officers was re-elected, as follows: Grosvenor Tarbell Blood, president; Herbert Nathan Dawes, first vice-president; Leo Walter Pickert, second vice-president; Frederick Harold Fay, secretary-treasurer; Charles Milton Spofford, assistant secretary. The usual routine business was taken up, and upon motion of L. W. Pickert it was voted to request the secretary to suggest to the Association of Class Secretaries the desirability of all classes holding annual dinners at Commencement.

At seven o'clock the tenth annual dinner was served in the banquet hall adjoining headquarters. President Pritchett, honorary member of the class, arrived soon after, and was given a most enthusiastic welcome. While the dinner was in progress, we were again visited by the class of '98, which was on its way to the Pop Concert, and cheers were exchanged by the two classes. The class of '85 was at this time partaking of its annual dinner at the same hotel; and a committee, consisting of Morss and Crosby, conveyed the greetings of '93 to '85, which the latter cordially returned. Telegrams were read from Marvine Gorham, of Detroit, A. L. Kendall, then in Philadelphia, and E. M. Hagar, of Chicago. The latter, in his disappointment at being cut out from the celebration, had ordered a round of cocktails for the party, in which the class drank his health at the beginning of the meal. Following the dinner, short talks were given by our honorary members, President Pritchett and Professor Emery, and these were followed by brief remarks from some of the other members.

At nine o'clock the class had the honor of escorting President

Pritchett to the "Tech Night" Pop Concert in Symphony Hall. Amidst prolonged cheering the class of '93, bearing aloft its large orange and black banner, accompanied the president to his seat in the centre of the hall. The class then took seats in one of the balconies, where its banner was hung conspicuously over the railing. With the banner and the cheering it is needless to say that every one was soon aware of the presence of '93. After an hour at the concert the class returned to headquarters for the remainder of the evening.

Those who attended the dinner from outside of Massachusetts were Professor Emery, Hanover, N.H.; J. A. Emery, Birmingham, Ala.; Buchholz, Weehawken, N.J.; Woodbridge, Schenectady, N.Y.; and Latey, A. B. Wadsworth, and Whiston, New York City. The others present were Dr. Pritchett, president of the Institute, and Bemis, Blood, E. B. Carney, Crosby, Dawes, Densmore, F. N. Dillon, Dodge, Fay, W. S. Forbes, Hopewell, Keith, Keyes, H. A. Morss, W. B. Page, Pickert, J. H. Reed, Reynolds, Spofford, Sweet, Tomfohrde, R. N. Wallis, H. T. Woods.

Wednesday, June 10, was spent in a field day at Misery Island. It was expected that the trip to Misery would be made by water, our classmate, S. Parker Bremer, having very kindly invited the class to go down on his new steam yacht. Unfortunately, however, Wednesday morning brought one of the thickest fogs of the season, so that navigation was impossible, and the trip was made at 10.45 A.M. by rail to Beverly Farms. It was but a few minutes' walk to West Beach, where it was expected to take the club launch to Misery Island. Although the island was less than a mile from shore, it was invisible, owing to the fog. In vain did the party wait for the appearance of the launch, and the interval was pleasantly passed in baseball and golf, the latter on an improvised course along the roadside. Repeated telephoning to the island finally brought out the cheering fact that, while on its way to meet us, the large club launch had run aground on a rock at just high tide. Shortly after, however, Farwell Bemis appeared with a small boat, in which he took over a party of five, and the remainder were soon brought across in another launch.

Immediately after our arrival the '93 flag was raised upon a tall staff near the landing, where it floated throughout the day. Lunch over, the early afternoon was spent at golf and tennis. At the former Dillon and Blake played Bemis and Kendall a nine-hole match with even score. The principal event of the afternoon was the baseball game between a team of eight, consisting of Emery (captain), Reed, Dillon, Morss, King, Dawes, Spofford, and Blood, and a team of seven, composed of Kendall (captain), Blake, Bremer, Crosby, Densmore, Pickert, and Bemis. The batteries were Emery and Dillon and Bemis and Pickert. Fay was umpire. Three innings were played, resulting in a score of 9 to 5 in favor of Emery's team.

Dinner was served at 6.30 o'clock, and for two hours the class partook of perhaps the most enjoyable meal in all its history. There was no speech making, although there was no lack of singing and cheering. The toasts were many, but none was drunk with more feeling than the silent toast to our members who have passed away.

Seventeen members were present at the dinner, as follows: Bemis, Blake, Blood, Bremer, Crosby, Dawes, Densmore, F. N. Dillon, J. A. Emery, Fay, A. L. Kendall, King, H. A. Morss, Perkins, Pickert, J. H. Reed, Spofford. C. L. Norton was with us for part of the afternoon.

The evening proved all too short; and, with regrets that the end of this most pleasant celebration had come, the members departed at nine o'clock in two launches for the Beverly shore, the return to Boston being by rail as we had come. The class cannot speak too highly of its entertainment at the island by our three members, Bemis, Bremer, and Perkins, who are members also of the Misery Island Club. Their contribution was perhaps greater than any other toward the success of the decennial celebration. Those fortunate enough to be present at the field day will not forget the new yell of the evening, "Yip, yip, yip, yip, yip, yip, Perkins."

1894.

SAMUEL C. PRESCOTT, *Sec.*, Mass. Inst. of Technology, Boston.

Howard R. Barton was married on June 18 to Miss Ethel Breed Sherman, of Englewood, N.J.—Pollock and Tabor have each purchased an estate on Long Island, N.Y.—Mrs. Locke, wife of J. Calvin Locke, died in Brooklyn, N.Y., in May, from an operation.—A. M. Robeson is consulting mechanical engineer with Eckstein & Co., Johannesburg, Transvaal, South Africa.—Mr. and Mrs. Darragh de Lancey (Miss Gallup) announce the birth of a daughter, Anna Halstead, on June 9.—Among the recent promotions at the Institute three have fallen to '94 men: Frank P. McKibben has been made Assistant Professor of Civil Engineering; Harry W. Gardner, Assistant Professor of Architecture; and Samuel C. Prescott, Assistant Professor of Industrial Biology.—Gardner is spending the summer in Italy, where he is conducting a summer school in architecture, while the summer courses at the Institute ordinarily conducted by him are in charge of Henry K. McGoodwin, '94, now Instructor in Architecture at the University of Pennsylvania.—Joseph W. Phelan and W. T. Hall, '95, are conducting the summer school in general and analytical chemistry at the Institute.—The following extract is from the Boston *Transcript* of June 2:—

Mr. Lucius Page Lane, who at the age of thirty-one years has died of nervous exhaustion, was born in this city at the family home, 623 Tremont Street, where he had lived nearly all his life, and where his death came about after an illness lasting through several months. He was the youngest son of the late Jonathan A. Lane. As a boy, he attended the public schools of this city, and was graduated from the Massachusetts Institute of Technology in 1894 and from Harvard College in 1895, afterward, in '95 and '96, continuing as a graduate pupil at Cambridge. He then worked for a time in a New York bookstore, and in 1896-97 became a student at the New York State Library School in Albany.

In 1898 Mr. Lane came to the Boston Public Library as an assistant to Worthington C. Ford in the statistical department, and later went into the catalogue department, from which he resigned last February somewhat sud-

denly because of illness. He was viewed at the library as an especially valuable man because of his knowledge of statistical and documentary work and for the painstaking accuracy which he brought to his work. His knowledge of methods of preparing government reports and statistics was such that he published a help to the study of these, giving excellent insight into the complicated matter which often was embodied in such reports. He also did good work for the American Statistical Association.

Mr. Lane was a man of broad culture, and interested in diversified subjects which make for the good of a community. While at Harvard, he was a member of the Total Abstinence League of the Graduates' Club, and was active in the work of the Prospect Union. As a member of the American Library Association, he went to London in 1897 to attend the International Library Congress. He belonged to the Massachusetts Library Club, the Twentieth Century Club, National Club of Massachusetts, the Congregational Club, the American Academy of Political and Social Science, was a life member of the League of American Wheelmen and also of the Harvard Union, and belonged to the Co-operative Association of America and to the Proportional Representative League and other societies and associations.

He was particularly interested in the plans of the Public School Association, to which he belonged, and in the municipal campaign of 1901 was ward chairman of the organization, and that year and the next was a member of its executive committee. As a member of the Union Congregational Church, Columbus Avenue, he had also been at times superintendent, teacher, and librarian of its Sunday-school, and was at one time president of the Young People's Society. All these organizations caused Mr. Lane to be prominent in library and sociological work and in non-partisan political and Christian activity.

His funeral, which took place privately from his home on Monday, was conducted by his cousin, Rev. Samuel Lane Loomis, D.D., and another relative, Rev. H. J. Patrick. The choir of the Union Church sang several hymns, and his three brothers and a cousin served as pall-bearers. The burial took place in the Shawsheen Cemetery at Bedford, where in the family lot young Mr. Lane's father is buried.

Mr. Lane is survived by his mother and his three brothers, E. H. Lane and Benjamin C. Lane of this city, and Alfred Church Lane, the State geologist of Michigan.

1896.

E. S. MANSFIELD, *Sec.*, 70 State Street, Boston.

April 13 and May 11 were observed as '96 nights at the Technology Club, at which times members of the class met informally for dinner and a social chat during the evening. As yet there has not been a very large attendance at these informal gatherings, but those who have been permitted to meet together have found the occasions very profitable and enjoyable. The regular '96 nights have been discontinued for the summer, but will probably be revived again early in the fall; and it is hoped that members of the class will make the most of these opportunities for meeting each other and discussing matters of mutual interest. Bills for the class assessment covering the years 1903-05 have been mailed to all members of the class, a goodly number of whom responded very promptly. It is desired to call the attention of those who have not responded to this obligation, and impress upon them the necessity of attending to this matter at once.—R. S. Hardy for the last two years has been assistant general superintendent of the Utah department of the Telluride Power Transmission Company, having an office in Provo, Utah. The property includes two power stations, one hundred and twenty-five miles apart, and a network of 40,000 volt transmission lines. Two new power stations are about to be erected, which will give a total of 15,000 horse power. Mr. Hardy has had an important part in all of the construction and general operation, and, among other things, has had entire direction of the building of about two hundred and fifty miles of high tension transmission pole lines.—Mortimer A. Sears, formerly superintendent of the Sulphur Mining Company, Davis, Mass., has accepted a position as superintendent of the mining department of the United States Fidelity and Guaranty Company, and is located in Mineral, Va., where a pyrites mine belonging to the company is being operated.—Howard E. Smith, United States assistant engineer, has been transferred from Cleveland to Ashtabula, Ohio, to supervise the government work at that place, as well as to look after the same class of work at the next harbor of

Conneaut. The work consists of dredging and building breakwaters and jetties. These two ports are very important on account of the large amount of ore received from Lake Superior, which is in turn shipped by rail to the Pittsburg district.—The engagement is announced of Miss Aimée Goulston, of Boston, to Meyer J. Sturm, of Chicago, Ill. Mr. Sturm was in town during June, and reports success as a Chicago architect, and also brings greeting to Tech men and those of '96 in particular.—E. A. Baldwin spent a few days in Boston during the last of May, and has since returned to Schenectady, where he is connected with the engineering department of the General Electric Company.—Gaylord C. Hall is connected with the Manhattan Elevated Railway Company, and his present address is Duane Street, New York City.—Daniel A. Richardson is living on Sigourney Street, Hartford, Conn. Mr. Richardson is married and has a child, and at present is engaged in the decorative lamp business, together with the sale of other electrical supplies.—J. Lloyd Wayne has left the engineering department of the New York Telephone Company, and has taken a position as assistant under Professor Miller in the mechanical engineering laboratory of the Institute. Mr. Wayne had charge of some of the details of the late test by the Senior Class of the Lincoln Wharf power station of the Boston Elevated.—H. D. Jackson, of the Boston Elevated, has made several contributions lately to the electrical papers on general street railway work and electrical testing. He has also read papers on these subjects before students and electrical conventions.—W. S. Rhodes has taken a position with the engineering department of the Massachusetts Electric Companies, where he is engaged in designing stations, laying out lines of track, and other railroad engineering work.—H. A. Poppenhusen is president, and Joseph Harrington superintendent, of the Green Engineering Company, having its principal office in Chicago, Ill.—Lucius S. Tyler has been in Boston for the past month or two, attending to private business.—F. G. McCann has been advanced from the position of mechanical draughtsman of heating and ventilating to chief engineer of the Board of Education of New York City, having taken

three competitive civil service examinations, and having occupied first place in each test. Mr. McCann has charge of about five hundred buildings used for public school purposes, and looks after the heating, ventilating, electric lighting, and bell work, as well as the elevators. He designs all new work, and supervises the repairs.—Henry A. Pressey, formerly of the United States Geological Survey, and at present Professor of Civil Engineering in Columbia College, is now associated with Hugh MacRae & Co., of Wilmington, N.C. The company has a branch office in the Kellogg Building, Washington, D.C.

1897.

JOHN A. COLLINS, JR., *Sec.*, 79 Tremont Street, Lawrence, Mass.

William Otis Sawtelle was married on June 17 to Miss Louise Coburn Burpee, of Bangor, Me. It is understood that Mr. Sawtelle intends going abroad for two years, for the purpose of study.—John B. Taylor was married on June 10 to Miss Marcia Estabrook Jones, of Corey Hill, Brookline, Mass.—John P. Ilsley, Jr., was married on June 13 to Miss Annie Davenport Alexander, of New Brighton, Staten Island.—The secretary regrets that the "Class News" in this issue of the REVIEW is so meagre, but what there is shows that '97 is as popular as ever with the ladies. No doubt there are many incidents and happenings in which our men are concerned that would be welcome news to the class; but for obvious reasons the secretary never hears of them, and the "News Column" is so much shortened. A little co-operation from the fellows, especially those quite removed from the East, would be greatly appreciated. The secretary has just received word at the time of this writing of the death of Frank Everett, Course VII. The end was very sudden, being caused by a hemorrhage, although for more than a year past he has had some tubercular trouble. The funeral was held in Chicago on July 2.

1898.

C.-E. A. WINSLOW, *Sec.*, Hotel Oxford, Boston, Mass.

V. R. Lansingh has been elected secretary of the North-western Association of the M. I. T., and the reputation of that organization for activity is likely to be preserved.—R. S. Allyn announces his engagement to Miss Laura Harris Chapen, of New York. Miss Chapen is the soprano soloist at the Tompkins Avenue Congregational Church in Brooklyn.—W. G. Zimmerman's address is changed from 619 Cleveland Avenue to 1807 Barry Avenue, Chicago.—'98 had its fair share of June weddings this year. On the first day of the month R. W. Pratt and Miss Elizabeth Southwick, of New York, were married at St. John's Church, Jamaica Plain, Mass. Pratt is now in Columbus, having been appointed chief engineer of the State Board of Health of Ohio, and is thus doubly open to congratulation.—On June 18 F. H. Twombly was married to Miss Ethelberta, daughter of Mr. and Mrs. Charles E. Hasbrook, at 36 Union Avenue, Bound Brook, N.J.—J. N. Goddard was married on the 30th to Miss Kathryn Turpin, daughter of Dr. T. J. Turpin, at Christ Church, Laredo, Tex. They will be at home after August 10 at Monterey, Mex.—R. C. Prosser and E. C. Little are with Isaac S. Taylor, one of the prominent architects of St. Louis. Prosser is in charge of the erection of two large factories, and Little has been appointed superintendent in charge of the construction of the Missouri State Building for the World's Fair.—Edward T. Folkes has been awarded the Rotch travelling scholarship as a result of a competition held on April 19, 20. The scholarship grants \$1,000 annually for two years, to be expended in foreign travel and study. A short time ago he won the gold medal in the Beaux-Arts competition in New York City.—The quinquennial reunion of '98 held at Commencement time proved an immense success, and it is probable that the class dinner may be held annually at this time in future. The dinner this year was on the eve of Commencement Day, Monday, June 8, and at Young's Hotel, as usual. At the business meeting the reports of the secretary and treasurer were

read, the latter showing a small cash balance. A discussion followed of plans for the class book soon to be issued, S. S. Philbrick urging that photographs of the members of the class, as they look in 1903, be included, after the fashion of a Senior Portfolio. It was voted that a committee of three be appointed to consider the matter with full powers, and Philbrick, Bennink, and Winslow were named to constitute the committee. The question of a class fund was then taken up, and it was voted to turn the small sum of money now in the hands of the secretary over to a special committee of three who shall take what steps they deem necessary to increase it. The fund is to be made up by voluntary subscriptions of members of the class, beyond the annual assessment of one dollar, which pays the ordinary expenses of the class organization. It will be used at some later date either as a benefit fund for members of the class, or to make some suitable gift to the Institute. Coburn, Allyn, and Lansingh were chosen to serve as the class fund committee. The dinner committee for next year includes J. T. Robinson, Jr., Coburn, and Winslow; and the committee on informal reunions, Pease, Butcher, and Curtis. Forty-two men were present at the class dinner besides President Pritchett, whom the class was fortunate enough to welcome as its guest once more. During the repast an informal canvass revealed the fact that, of the forty-two men, sixteen were married, and gave the following information as to the financial condition of men five years out of the Institute. The lowest salary reported was \$832; the highest, \$14,000; the average, \$1,754. Nine men are below \$1,000; seven, between \$1,000 and \$1,500; sixteen, between \$1,500 and \$2,000; nine, \$2,000 and over. After the dinner President Pritchett told of the new developments in the Institute work and of the spirit behind them. Robinson acted as toastmaster in his usual happy fashion; and short speeches were made by Winslow, Curtis, Russell, Coburn, Allyn, and Gardner. On Commencement Day a '98 punch was served in the quiet room of the club, and very pleasant visits were exchanged with the '93 men who had their headquarters at the Brunswick. About a score of the class attended the Commencement exercises, and were much

impressed with the character of the work presented. In the evening thirty-six of the men gathered at the "Pops," and added their share to the merriment of the occasion.

1899.

HARRY L. MORSE, *Sec.*, The Technology Club, Boston.

The secretary would be glad to receive information as to the present addresses of the following men: J. K. Clark, A. P. Gonzales, H. H. Hewitt, H. P. Jansen, Jr., L. R. Loveman, J. D. McBride, M. C. Mott-Smith, L. A. Newell, E. R. Sheak, L. H. Turner, and William White.—The Woonsocket (R.I.) school committee on June 15 elected Amasa A. Holden, sub-master of the high school, principal. Mr. Holden at one time taught in Chelsea.—H. W. Oxnard has removed from New Douglas, Ill., to Norway, Me.—William Otis Sawtelle, for four years instructor in the Bangor High School, has accepted a position as instructor in the Institute. He will resume his duties upon his return from Europe in the fall.

1900.

GEORGE E. RUSSELL, *Sec.*, 25 Broad Street, New York, N.Y.

Albert S. Merrill has recently received an appointment as assistant physicist in the newly created National Bureau of Standards at Washington, D.C.

1901.

FREDERICK W. FREEMAN, *Sec.*, West Newton, Mass.

The last monthly supper before the summer months was held at the Tech Union on Wednesday evening, May 20. It was attended by twenty-five members of the class, and was a very successful ending to the series of suppers held through the winter. The number of available members of our executive committee has been decreased by the departure of Charles G. Tufts, who has gone

to Binghamton, and that of Harry E. Dart, who left the Institute staff to take charge of an electrical plant in Park City, Utah.—Edward B. Belcher is in charge of the annealing plant of the Fore River Ship and Engine Company at Quincy.—Warren I. Bickford is erecting and selling engineer with the Iron City Engineering Company of Pittsburg, Pa.—Perkins Boynton has the position of assistant bacteriologist with a Philadelphia firm.—John P. Briggs is assistant engineer with the Eastern Steel Company of Pottsville, Pa.—L. S. Butler is studying architecture at the Beaux-Arts, Paris.—B. F. Clark, Jr., is with R. H. Soule, consulting engineer in New York City.—G. A. Cowing is chemist for the Harkness & Cowing Company, of Cincinnati.—N. Loring Danforth is consulting mechanical engineer for the John W. Danforth Company, of Buffalo, N.Y.—E. H. Davis was a graduate student at the School of Political Science, Columbia University.—William F. Davidson is superintending the erection of a blast furnace at Du Bois, Pa.—F. F. Dorsey is patent attorney with Phillips, Van Everen & Fish, Boston.—Leonard S. Florsheim is manager of the Kabo Corset Company of Chicago.—Horace E. Hildreth is engaged in the work of eliminating the grade crossings at Fall River.—Milton W. Hogle is with the American Sheet Steel Company, of Pittsburg, Pa.—Austin T. Hyde is assistant superintendent of the Fort Hill Chemical Company of Rumford Falls, Me.—Horace Johnson is chemist for the Waialua Agricultural Company at Oahu, Hawaii.—Laura M. Lundin is computer at the Harvard College Observatory.—Leslie E. Merrill is night foreman with the B. & A. R.R. at Rensselaer, N.Y.—Ray Murray is assistant to the chief engineer of the American Bridge Company, of New York.—Alfred D. Nutter is draughtsman in the office of chief engineer, Union Station, Pittsburg, Pa.—Percy H. Parrock is assistant superintendent of the rolling department of the Pennsylvania Steel Company at Steelton.—A. W. Payne is manager of the Western office of the E. Howard Clock Company at Chicago, Ill.—F. H. Pough is manager of the S. & S. C. White company, sulphur refiners, New York City.—G. P. Shute is field assistant with the commissioner on additional water supply for the city of New

York.—Albert F. Sulzer is chemist with the Eastman Kodak Company at Rochester, N.Y.—L. B. Wilder is superintendent of the Uintah Copper Summit Company in Utah.—L. E. Williams is assistant master mechanic for the Lake Superior Contracting and Dredging Company.—Frank D. Rash was married on December 10, 1902, to Miss Susan E. Atkinson.—The members of the class will be pleased to hear of the engagement of their president, E. F. Lawrence, to Miss Alice L. Millett, of Portland, Me.—F. W. Freeman was married on May 25 to Miss Lucia M. Proctor, of Newtonville. Among the ushers at the wedding was M. C. Brush, '01, from Omaha.—C. F. Campbell was married in April, and is now residing at South Acton, Mass.

1902.

CHARLES W. KELLOGG, JR., *Sec.*, 51 St. Paul Street, Brookline, Mass.

Since our last issue the first class smoker has been held. About thirty members of the class met on April 10 at the Tech Union for an informal evening. The next occasion on which '02 as a body was very much in evidence was Tech night at the "Pops." The class, about thirty strong, was assembled at a good vantage point in the hall, and helped considerably in making the cheering part of the programme successful. Professor Clifford was the guest of the class on this occasion.—At the graduation exercises of the Institute, on June 9, the degree of Master of Science was conferred on the following men from 1902: I. R. Adams, S.B.; H. E. Bartlett, S.B.; D. M. Belcher, S.B.; W. R. Greeley, S.B.; F. H. Hunter, S.B.; C. W. Kellogg, Jr., S.B.; and W. P. R. Pember, S.B. The following from '02 received the degree of Bachelor of Science: J. R. Bates, F. Z. Brown, J. H. Brown, H. C. Burdick, C. F. Gardner, P. Hansen, J. D. Ireland, Ph.B., S.B., J. L. Jones, L. R. Kaufman, F. P. Montgomery, G. B. Obear, H. E. Raymond, H. C. Turner, Miss L. G. Weld, D. Wemyss, I. Williams, Z. N. Matteossian, A.B., J. Philbrick,

H. D. Strong, Miss E. L. Williams.—The following has been reported to the secretary since the last issue: Andrew E. Ritchie has left the Maryland Steel Company and is now with the Baltimore Engineering Company. His address is 706 St. Paul Street, Baltimore, Md.—A. R. Childs is now with Stone, Carpenter & Willson, architects, in Providence. He lives at 150 Summit Street, East Providence, R.I.—Erastus LeR. Brainerd is with the roadmaster, N. P. R.R., at Butte, Mont.—T. G. Miller has changed from the Mexico Central to the Mexico National Railway, and may be reached in care of H. M. Taylor, Superintendent Construction Mexico National Railway, Mexico City.—The New York Shipbuilding Company has recently drawn four '02 men to Camden, N.J.: Stephen A. Gardner, Jr., and Carlton B. Allen, formerly with the Riter Conley Company in Pittsburg, and Walter O. Teague and Harold A. Everett, who left the Fore River Ship and Engine Company of Quincy.—Lombard is assistant business manager of the Empire in Kansas City.—It is a sad duty to announce the death of Herbert Phinney, which occurred in Pittsburg on January 29 of this year. Although he left the Institute at the end of the Freshman year, he has gone down in class history as the man who climbed the flag pole at the South End grounds on the occasion of the cane rush, and tore down a rag of a Sophomore flag.—Charles H. Boardman, Jr., is with the Pencoyd Steel Company in Philadelphia.—Maurice Goldenberg is with the American Bridge Company, Pittsburg, Pa.—Alfred W. Allyn is in the structural department of the P.R.R. at Pittsburg, Pa.—R. S. Franklin and Richard L. Frost are now with the Draper Company at Hopedale.—Fred C. Randall and Charles W. Kellogg, Jr., are with Stone & Webster, Boston, Mass.—Robert Mayo, Jr., has been transferred from the Midland Works to the Ætna Standard Works of the American Sheet Steel Co. His address is now Bridgeport, Ohio.—Charles Levi Shedd was married on Wednesday, June 17, to Mabelle Arlette Howard of Franklin Falls, N.H. Mr. and Mrs. Shedd live at 64 Franklin Street, Franklin Falls, N.H.

NECROLOGY

CHARLES KASTNER,

PRINCIPAL OF THE LOWELL SCHOOL OF PRACTICAL DESIGN, 1872-1891

Those who have been directly or indirectly interested in the evolution and development of Industrial Designing, both in America and in Europe, must have been saddened and deeply concerned in the death of Professor Charles Kastner, which occurred in Boston on April 30 last.

Mr. Kastner was born in Mulhouse, Alsace, in the year 1815; and his whole life had been devoted to the study, practice, and advancement of practical Print Designing,—that most important branch of Industrial Art.

To claim a place among and be recognized as one of the foremost designers of the world is, indeed, an enviable position and one not easily attained. But such was the success of Professor Kastner, who from the time that he commenced the study of Design until his retirement from active service made strong advancement and easily gained recognition from the best Industrial Art critics in Europe and America.

For, however many reasons men may give for their admiration of works of art, it is in reality the probity and intensity with which the artist has carried out his work by which they are dominated; and it is his method of overcoming difficulties, not of evading them, which gives style, breadth, and becoming mystery to his execution. This quality of intensity, whether it be the result of curiosity for form or of a profound imagination for Nature, which lives, as it were, upon the surface of a design or of a picture, is the best test of what we may consider as Art.

Charles Kastner was, indeed, fortunate when, at the age of eighteen, he was allowed to become an understudy in the studio of his uncle, that most famous designer of his time, Lebert, of Paris

and Mulhouse. Gifted with unusual talent for the work, it proved but a short period before the genius of the young man was detected, as well as his unusual business abilities; and, at the age of twenty-two, he was made the representative of Lebert for Germany and England. His work in those countries for his uncle was very successful.

At that time the print mills of this country were almost entirely dependent upon Europe for their designs and styles; but a representative of the Pacific Mills of Lawrence, discovering the possibilities that were manifest in Mr. Kastner's work, induced him to come to America. From that time he was a very powerful factor in the establishment and development of decorative art in the United States, and his influence was felt throughout the world.

In the year 1872 the late Mr. Augustus Lowell founded the department in the Massachusetts Institute of Technology known as the Lowell School of Practical Design; and Mr. Kastner was tendered the position of principal, which he accepted. It is safe to say that at the present time there is scarcely a print mill in the country which does not contain from one to twenty designers who were former pupils of Professor Kastner and graduates of the "Lowell School."

Through the efforts of Professor Kastner and under advice from Mr. Lowell a department of textile weave-designing was added to the school. This, however, because of its rapid growth and the increasing demand for such instruction, was transferred to Lowell, Massachusetts, and became the foundation of the present Lowell Textile School.

Professor Kastner was also unusually successful in furnishing to manufacturers capable designers for interior decorating, stained glass, etc.; and it might be well to add that the head men in the largest mills and many other concerns of this country are graduates under this able man's instruction.

In 1901 Professor Kastner resigned from his duties as principal of the classes in designing, and as a result the school was temporarily closed. It was later reopened under the title of the Massachusetts School of Design.

The deceased leaves a brother, Émile, and the latter's wife and daughter, all of Paris.

The interment took place at Forest Hills Cemetery in Boston.

GEORGE HORACE PERKINS.

OTIS T. STANTIAL

Otis T. Stantial was born in Melrose, Mass., in 1863. He attended the public schools there, and in 1881 entered the Massachusetts Institute of Technology, from which he graduated in 1885. Until 1892 he was connected successively as chemist with the Friedensville Zinc Company, the North Chicago Rolling Mill Company, the Crane Company, and the William H. Deering Company. In 1892 he became assistant superintendent of the Illinois Malleable Iron Company, of which company, at the time of his death from pleuro-pneumonia on March 6, 1903, he was general superintendent and a director. He leaves a wife and an infant son. He was a member of the American Institute of Mining Engineers and of the American Foundrymen's Association.

The following tribute is from Mr. H. E. Bullock, president of the Illinois Malleable Iron Company :—

The writer first met Mr. Otis T. Stantial about October, 1889. The Illinois Malleable Iron Company had bought the laboratory of a defunct steel company, but found they had no one sufficiently up in chemical work to handle it. So the writer started to look up a teacher, and, going to a gentleman who had been prominently connected with the North Chicago Rolling Mill Company, learned from him of Mr. Stantial. He undertook to teach us how to make the solutions and determinations, stipulating, as the writer recollects, that he should not be expected to give us the results of his deductions or experiments elsewhere. This was agreed to, and he took two of us as night pupils.

We later found that his chemistry had given him, after a few months' foundry practice, knowledge that we had been years in acquiring by hard knocks and losses. We not only soon learned

to admire him for his knowledge and accuracy in the laboratory, but his good-nature and friendliness endeared him to all the members of our company who had the pleasure of meeting him.

When he was open for another situation, about 1890, we were unsuccessful bidders for his services, he going instead to the William Deering Company as chemist. There he remained until the middle of 1892, when he engaged to come to us as assistant superintendent. When he came, however, our superintendent had been made secretary, and our offices removed to the city. Hence Mr. Stantial at once became superintendent.

It was a difficult task, stepping from a laboratory into a position of superintendent of works that included malleable gray iron and brass foundries and machine shop, without having previous experience in the management of men. No one but a brainy and strong-willed man could successfully accomplish it; and, although some mistakes occurred at first, Mr. Stantial soon developed strength, making an admirable superintendent, and from 1894 was one of the three directors in the company.

He was more than superintendent, and helped shape the policy of the company. Busy as he was, he found time for some inventions, two of which he patented; namely, an automatic fire sprinkler and an improvement in automatic valves for sprinkler systems. He assisted in improving and inventing machinery for the business.

When the writer first knew him, he was slight and frail-looking, and during the earlier nineties he suffered occasionally from severe attacks that puzzled the doctors; but latterly he was robust and hearty, the picture of health and strength. He was strong and courageous, and would throw a man out of the place on provocation.

He was very sympathetic, stanch, and true to his friends; and, while strict with his men, they loved him and were sincere mourners. If he had any enemies, the writer does not know them. He was an honest, true, and clean-lived man, and to know him was to become attached to him.‡

BOOK REVIEWS

FINANCIAL HISTORY OF THE UNITED STATES

BY DAVIS RICH DEWEY, Ph.D., Professor of Economics and Statistics, M. I. T. pp. xxxv., 530. New York: Longmans, Green & Co., 1903.

This volume appears as one of an "American Citizen Series," edited by Albert Bushnell Hart. A careful study of the book will certainly be profitable for any American citizen. Dr. Dewey has written this book out of the fulness of his long experience as a teacher, and it is a guide to the student as well as a text for the reader. The progress of our national finance has followed a path which, to a casual observer, may seem difficult and obscure; but, with this book in hand, the wayfaring man, though a fool, may not err therein. It does not by any means follow that he who runs may read. The subject is not one that suits an idle or a careless hour, and the author has nowhere tried to dilute the substance of his story. On the contrary, he has written always with a view to the needs of the thoughtful investigator who intends to explore and sift and weigh. Every chapter begins with general and special lists of references for reading and consultation; and the first twenty pages of the book are filled with concise, critical bibliographies of authorities and sources of information, including public documents and periodicals. These bibliographies, like the index also, are models of helpfulness.

In the preface the author declares that he has kept two purposes in mind: first, the proportions or general perspective of the subject; second, the relations of financial legislation to democracy. One chapter is devoted to the elements of colonial finance, and another to the embarrassments and failures of the Revolutionary era. About sixty pages—three chapters—are given to the establishment of a national system of finance under the new Consti-

tution by the genius of Hamilton and his associates. Three more chapters contain a discussion of the policies of Gallatin, of the attempts to provide for the expenses of the War of 1812, and of the problems of reorganization after that war down to 1830. Tariff legislation from 1818 to 1833 has a chapter to itself. Then the Jacksonian attack on the second United States Bank, the panic of 1837, the fluctuations in the perennial tariff controversy, and the questions of State Banking and the Independent Treasury system bring us to the outbreak of the Civil War and the middle of the book. The whole of the last half of the work is filled with the history of our finances during and since the Civil War. The author's analysis of that history is indicated by the topics chosen for subjects of the chapters, as: "Legal Tenders; Loans, Taxation and Banking of the Civil War; Funding of the Indebtedness; Greenbacks and Resumption; Banking and Taxation, 1866-79; Silver and Banking (The Bland Act), 1873-90; Surplus Revenue and Taxation, 1880-90; Silver and The Tariff (Silver Act of 1890, McKinley Tariff, Gorman-Wilson Tariff), 1890-97; Tariff (Dingley, 1897), Spanish War Finance, and Currency Act of 1900." A final chapter considers ways and means of legislation and administration which affect or concern our financial system. The most striking feature of the book, apart from its lists of references, is the generous use of graphical statistics. There are 18 full-page charts, about half of which show the constituent elements and the amounts of ordinary expenditures and receipts during different periods since 1791. The others tell the story of local bank statistics, 1834-63; of the premium on gold, 1862-79; value of silver, 1867-99; of receipts from internal revenue, 1863-98; of bank circulation, 1878-90; of net gold in treasury, 1893-97; of treasury notes redeemed in gold, 1885-1900; and of the composition of the public debt, 1891-1901. These charts are very illuminative, and Dr. Dewey's name is a guarantee of their accuracy. It is to be regretted that in many of them, where the system of marked squares is adopted, the small size of the page has necessarily made the cross-lines so minute as to tax the eyesight.

There are also a large number of tabular analyses of financial statistics of various kinds, many of which must represent a generous expenditure of painstaking study. No work of this kind known to us has been so lavishly supplied with condensed information of this peculiarly instructive nature. In fact, this work as a whole has but one competitor in the field, and for most purposes that is now outclassed. In view of all the political turmoil since 1876 over financial questions it is strange that no adequate study of the financial history of the country has appeared until this one. There have been many political pamphlets with little educational value, and many monographs upon isolated topics, some of which essays, like Bourne's *History of the Surplus Revenue of 1837*, or Bullock's account of Revolutionary finances, have deserved high praise. But hitherto the only complete study of the financial history of the United States has been Albert S. Bolles's work in three volumes. Bolles's history ends with the year 1885. It lacks in style and method of arrangement. The author was not a historian, and scarcely possessed the true historical spirit. For reading, Bolles's volumes are probably the toughest meat that the young lions who prowl about university seminars in Economics and Political Science have had to eat during the last twenty years. In comparison with it Stubbs's *Constitutional History of England* is exciting, and the text of the dictionary is connected. The specialist will still find Bolles valuable for reference, but he will be happy to choose Dewey as his guide through the labyrinth.

The author deserves commendation also for the admirable poise of his statements upon matters that are still cause for contention. So wisely does he preserve the balance among conflicting advocates and witnesses that the reader feels himself under the guidance of a scholar, and not a partisan. In this Dr. Dewey has been faithful to his purpose to present "a general perspective of the subject." His second object, to show "the relations of financial legislation to democracy," has been as liberally realized as the inexorable limits of space in a volume of this size would permit. In brief, this volume shows great power of condensation, accuracy, and precision of statement, complete mastery of the subject and of the

sources of information, and the full measure of judicial and scholarly temper.

It may be helpful to note, in passing, that the name and fame of a recent governor of Massachusetts have probably caused the author to make Roger Wolcott instead of Oliver Wolcott the successor of Hamilton as Secretary of the Treasury (p. 117). Mr. Wolcott's name is given correctly in the list of secretaries on page 509. On page 192 Matthew Carey should be Mathew Carey. The table at the bottom of page 233 seems to show a wrong total under the "Surplus" column. In line ten on page 449 the word "made" has evidently been omitted.

CHARLES H. LEVERMORE.

ANALYTICAL CHEMISTRY

BY F. P. TREADWELL. Translated from the second German edition by William T. Hall. (M. I. T. '95.) Vol. I., Qualitative Analyses. 8vo. xi+466. New York: John Wiley & Sons, 1903.

The writer of this review has often declared that the writing of a book on Qualitative Analysis, thus adding one more to the number already in existence, was almost a crime, which could only be pardoned on the supposition that the writing of it might save the author's family from privation and want. So many books have been written on Qualitative Analysis containing absolutely nothing to justify their publication that the above possibly exaggerated statement expresses the views of many teachers of Chemistry.

The book written by Professor Treadwell is, however, very different from the ordinary book on the subject. It is a book written by one who is acknowledged as one of the best teachers of Analytical Chemistry in Europe; an American by birth, a favorite pupil of Bunsen's, and later one of his assistants; then *Privatdocent*, assistant professor, and now professor of Analytical Chemistry at the Polytechnikum at Zürich. A book on Qualitative Analysis by a man with this training and reputation is an unusual event, and immediately commands attention; and, as one

carefully turns the pages of the book, he feels that it could only have been written by a thorough master of the subject. There is nothing really new in the way the subject is presented. The opening chapters, dealing with the general principles on which analytical chemistry depends, are followed by chapters on the reactions of cations and anions, after which is a detailed description of the course of the analyses, in which are given numerous tables, showing methods of separation to be used under different conditions; and the closing chapter deals with reactions, and detection of the rarer metals. Yet the matter is presented so fully and in such a careful and thoughtful manner that it makes the book a standard work on the subject.

Under General Principles, Oxidation and Reduction are briefly discussed; and the few pages on Mass Reaction, the Ion Theory of Arrhenius, and on Hydrolysis, are very clearly written. Reactions in the Dry Way include Bunsen's favorite method of Reduction on the Charcoal Stick, as well as reduction on charcoal.

To the chapters on the reaction of cations and anions too much praise cannot be given. In these chapters one finds stated in concise language all of the principal reactions used in qualitative analysis, and a laboratory course based on this part of the book would give a student a very much better knowledge of the chemical properties of the elements than the study of the majority of text-books on general chemistry. There is, however, one criticism that might be made regarding these chapters; and that is the too frequent use of structural formulæ, which in many cases seem to express a knowledge of the position of the atoms in the molecule, of which, to say the least, there is no absolute proof.

The chapter on the course of analyses is composed principally of tables, as the author believes that by the use of tables the best results with class work can be obtained, and in this the reviewer agrees; and, further, if the attention that should be paid to the reactions of cations and anions is insisted upon, there is little danger of the student, by the use of tables, becoming a mere rule-of-thumb analyst.

The concluding chapter on the rare metals is excellent, and embodies the latest researches on these elements, and makes one wish the author had written one more chapter,—the examination of the alloys obtained by the electric furnace, the number and importance of which is growing year by year.

We have contented ourself with praising the book, not that the book is perfect,—what book is? For instance, not using to a greater extent the more modern themes of chemistry in explaining various chemical reactions might by many be considered a mistake; but why, when a book is so good and so well written, is it necessary to mention every detail in which one may differ from the author?

In our praise of the book we might well include the work of the translator, and English readers are to be congratulated that Professor Treadwell's Quantitative Analysis is also being translated by Mr. Hall.

LEONARD P. KINNICUTT, '75.

HANDBOOK OF CLIMATOLOGY: PART I., GENERAL CLIMATOLOGY

Translated by Professor Robert DeC. Ward, Harvard University, from the "Handbuch der Klimatologie" by Dr. JULIUS HANN, of Vienna. New York: The Macmillan Company, 1903.

The "Handbuch" of Dr. Hann has rightly been regarded as the standard work upon Climatology, and the wish has been frequently expressed that we might have as good a treatise on the subject in our own language. Professor Ward has accomplished this, and he has also endowed the English edition with some noteworthy improvements. By some additions and changes the discussion of General Climatology has been brought up to the present time. The essential advances of the science which have been noted chiefly in technical publications during the last six years are here presented in a very readable form. Some excellent examples of climatic phenomena in the United States have also been added. The paragraph headings, which are mostly new, are an obvious improvement; and the "Conversion Tables" are a convenience to the American reader.

When one reads some chapters of this edition with the original in hand for comparison, he realizes that Professor Ward has been a careful, judicious translator, and his additions, to which the author has assented, have enhanced the value of the work. It should also be observed that he has made a volume which reads so well and so naturally that the reader is usually unmindful that it is a translation.

Climatic conditions exercise a very important and often a controlling influence upon our industries and habits of life, and there are few sciences which treat of such constant and world-wide effects upon the human race. The English-speaking student has now the best treatise extant upon this subject, given to him in his own language. This should increase the interest in General Climatology, and should serve to give it the position it merits in collegiate and technical education.

Professor Ward is now lecturer on Climatology at the Institute.

W. H. NILES.

TECHNIQUE, 1904

It is most fitting that the 1904 *Technique* should be dedicated to Dean Burton, and that his portrait and a well-considered sketch of his career should hold the place of honor in the volume; for certainly, no recent act of the Institute authorities is of such moment to the student body as the creation of the office of Dean and the filling of that office with a man so admirable as is Professor Burton.

Of what may be called the permanent features of *Technique* — its membership lists of fraternities and other associations, its athletic chronicle, its register of students — nothing new can be said. The paper is good, the typography excellent, the fraternity emblems well engraved; and a decided gain has come through the use of a less heavy paper on which to print these cabalistic signs. It is to be wished, however, that in this, and in earlier *Techniques* also, more care might be taken with the proof-reading, errors in spelling being peculiarly offensive upon pages so handsome as are these.

The four class histories are amusing, the Freshmen availing

themselves of the Biblical form of narrative, the Sophomores striking a newer vein in their "Letters from a Half-made Contractor to his Son at Tech," the Juniors seeing themselves, most appropriately, through the eyes of a supposititious "Co-ed," and the Seniors telling their story in the perennial jingle of the Hiawatha verse. A "Hall of Fame," in which some of the Faculty are unflatteringly but good-naturedly enshrined, leads to the pages of "Grinds," in which the repartee of bright students and the blunders of dull ones alternate with more or less traditional jokes upon the foibles of the instructing staff. Alleged class statistics, college verse, and a "Prof's Show" give opportunity for further fun that, while not always enlivening, is never bitter or coarse. The admirable portrait of the late Professor Runkle which appeared in *Technique*, 1901, is appropriately reproduced among the pages in memoriam.

The drawings for which *Technique* is notable among college publications, while perhaps not so numerous as in some other issues, are, as a rule, worthy of the reputation of the Institute undergraduate; and among the head and tail pieces are to be found some very clever conceits. The brown and gold binding is in good taste, and is a happy departure from the well-meant attempts of some earlier issues to keep loyal to the Institute's red and gray. The advertising pages betoken good business management, and the reader is skillfully trolled through them by a series of witty and pithy foot-notes. As may be said of every issue of *Technique*, the annual is a credit to the young men who get it up, and is stamped throughout with the characteristic thoroughness of all Institute work.